TECHNOLOGY DEPT.

FEBRUARY
1933

First Copy

FLEET OWNER

THE FERGUSON PUBLISHING CO., 90 WEST ST. NEW YORK, N.Y.

Devoted to the Better Operation and Maintenance of Truck, Bus, Taxicab, Passenger Car and All Automotive Fleets

FEATURES OF THIS ISSUE:

TRUCK Developments in 1932, Reviewed in Brief ● Giddap! or Back-Up?—An Editorial ● How Greyhound Boosted Inspection Periods, by W. A. Duvall ● Keeping Records of Motor Truck Maintenance, by E. E. La Schum ● How One Man Services a 51-Vehicle Fleet ● Helping you to Select a Refrigerated Job ● New Model Announcements ● Trouble Shooter's Department ● Question-of-the-Month Club ● And Our Usual ● Co-Operative Departments ●

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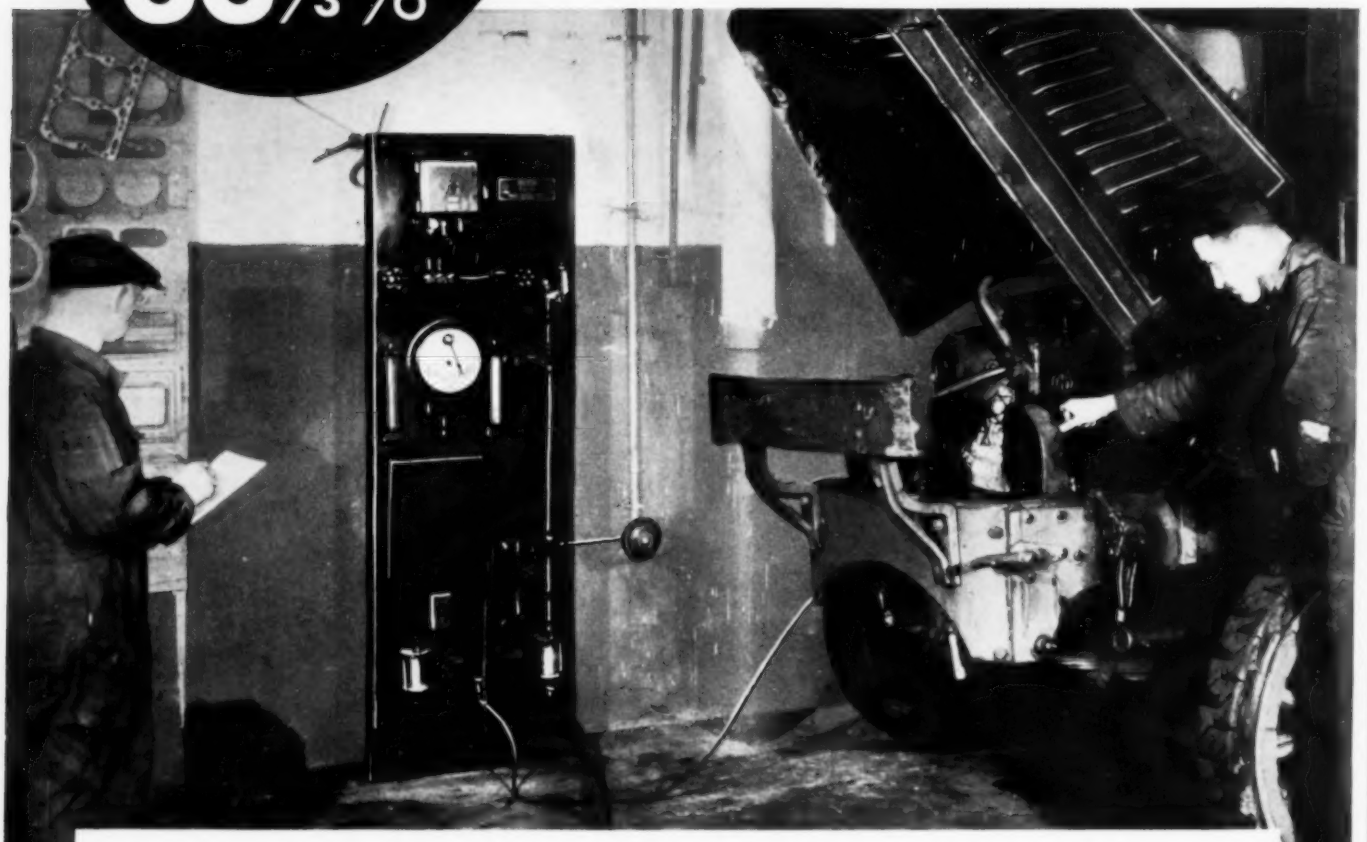

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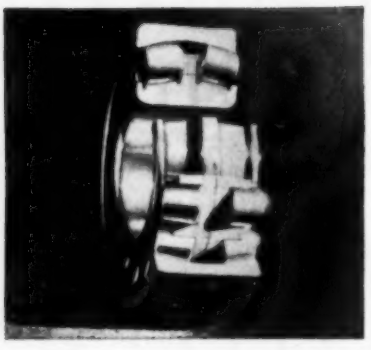

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The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

Vol. 10 New York, February, 1933 No. 2

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Published Monthly by

The FERGUSON PUBLISHING COMPANY

90 West Street, New York City

E. F. FERGUSON
President

A. L. CONLEY
Sec. and Treas.

HENRY CLAY FISCHER
Editor

ADVERTISING REPRESENTATIVES:

Chicago—D. B. Trott, 840 Montrose Ave., Tel. LONg Beach 2331.
Detroit—E. C. Hillier, 190 E. Grand Boulevard.
Los Angeles—R. H. Deibler, 244 W. 15th St., Tel. Richmond 5771.
New York—I. Hayes Fuller, 90 West Street, Tel. REctor 2-9129.
Philadelphia—Hal. H. Clark, 170 Woodbine Rd., Menoa, Pa.

Subscription: $1.00 Yearly: Single Copies 10c.

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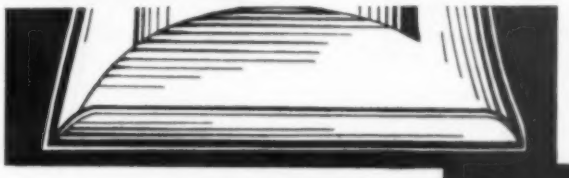

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THE "close-up" above is presented to show the physical structure of the brake lining material that has established new standards of ease and dependability in stopping cars, trucks and buses safely—American Brakeblok. It is this physical *structure* which differentiates American Brakeblok from other brake linings. It is *one* of the reasons for the extraordinary results which American Brakeblok gives.

Notice that the material is a dense, homogeneous solid—not woven, not stitched, not laminated. Neither is it "*molded*"—on the contrary it is formed under great pressure—heat-treated—then ground to size. It is the same all the way through, and therefore presents a braking surface which never changes in its character. American Brakeblok has still further superiorities. It contains no rubber. It is non-compressible. It does not swell with moisture. It does not burn out or break down. American Brakeblok has the added advantage of alloy mesh or grid back, permitting deeper countersinking of rivets and giving far better installations.

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Say "I saw it in FLEET OWNER"—It Helps!

VOL. 10
NO. 2

The FLEET OWNER

FEBRUARY
1933

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Giddap! or Back-Up? » » » »

FAMILIAR terms to the "horse engineer" but slightly out of place in the automotive industry. Perhaps "Forward or Reverse?" would be a better title to this editorial, but, on second thought, if we don't all get together and stem the tide of adverse legislation and prohibitive taxation that is being aimed at our industry, who knows but that we might again be commanding old Dobbin to "giddap" or "back up."

This is not going to be a dramatic gesture anent the now time-worn railroad-highway controversy. So much has been said, written and published on this subject, that to add to the avalanche of newsprint that has been claiming front page position won't really do a lot of immediate good.

What we want to do, however, is to call the attention of every operator to the activities of the recently formed National Highway Users Conference, now functioning at Washington, D. C. In spite of the widespread attacks being launched at the motor vehicle, from all sides, there has been a definite lack of unison on the defensive side. To make it possible for the defensive forces to concentrate their activities, the Conference was organized. As its name implies, it is an organization of "users of the highway" and its membership includes manufacturers, wholesalers, retailers, farmers, industrialists and others, including bus and truck operators and their associations.

Their Director, Roy F. Britton, defines the Conference's purpose as follows: "The National Highway Users Conference does not intend to fight the legislative battles of the motor industry either at the State Legislatures or at the National Capitol. It does propose, however, to serve as an agency for the co-ordination of the activities of interested groups and for the dissemination of information to such State organizations as are set up along the same lines as the national body. With these it will cooperate."

So it's now your move boys. Most fleet operators already belong to some local or state bus or truck operators' association. The secretaries of these associations should get into immediate touch with the National Highway Users Conference, so that all activities in defense of impending taxation and adverse legislation might be properly co-ordinated. Start the ball a'rolling and don't wait for "George" to do it. So much for that.

As an example indicative of the type of adverse motor legislation which will be sought at State Legislatures in the early future is a "model" law which has been widely distributed. It is printed in full elsewhere in this issue. This "model" law defines the various types of motor carriers and subjects all kinds, including private carriers, to regulation. In addition it suggests a mileage tax on both trucks and buses and makes mandatory the fixing of rates of both contract and common carriers.

This "model" law has the "formal approval" of the National Association of Railroad and Utilities Commissioners. It, inversely, is meeting the opposition of motor vehicle operators in most states. But powerful influences will be exerted to bring about its adoption. Need we say more?

Everyone knows by this time that the motor industry is now "paying, paying and paying" for its use of the highways. The term "free use of the highways" is now in the discard, along with the mustache-cup, powdered-wig and hoop-skirt. The present situation has been brought about because, and only because of competition. "When Better Service is Rendered, the Buses and Trucks Will Render It" to our mind, seems to be the real cause of the present railroad-highway controversy.

If "modern" service is rendered by the motor industry, to the direct detriment of other forms of transportation, a good sportsman would venture the opinion that those other forms of transportation have a job on their hands. And that job is one of offering more for the same money, if possible, or at least as much, instead of trying to throttle the progressive industry by legislating them out of the picture.

If we are to carry on, we cannot afford to sit tight and rest on our laurels, for they surely are laurels. It is not outside of our power to combat the impending menace of prohibitive taxation and adverse legislation. The National Highway Users Conference is the latest and most comprehensive movement towards co-ordination of the defensive forces. As we've said before, boys, it's now your move. A letter to the Editor of this publication will be placed in the proper hands, or, if you prefer, you may write directly to National Highway Users Conference, National Press Building, Washington, D. C.

« »

The Editor's Page

« »

By W. A. Duvall,

Manager of Maintenance, Greyhound Management Company, Cleveland, Ohio.

Increasing *the* Time Between Inspections

How the Greyhound Management's New Inspection System Has Boosted Inspections of Motor Coaches to 15,000 and 45,000-Mile Periods

IN an industry which has gone forward rapidly because of quick acceptance of new developments that give promise of better performance or more economical operation, it is surprising how little progress has been made in that most important and much discussed problem—vehicle inspection.

At this moment there are motor carriers employing inspection systems which originally were developed for vehicles built half a dozen years ago. In the meantime the industry has forged ahead but most inspection systems have lagged behind and it is not uncommon to find 1922 practices being applied to 1932 fleets.

A year ago, Greyhound Management decided that its 5,000-mile inspection was no longer effective with present day equipment. Because of the many improvements in vehicle design since this company's 5,000-mile inspection originally was developed, it was believed that the interval could be jumped to higher mileages without hazard to the equipment. Then, too, it has been found that the 5,000-mile interval was unsatisfactory due to lack of time for detailed inspections.

Thereupon, a new inspection system, based on a 10,000 and 40,000 mileage interval was tried out on about 100 coaches. The 40,000-mile inspection, was a most thorough and complete inspection and naturally was much more detailed and complete than the 10,000-mile inspection.

A crew of five men does a complete inspection job in approximately 36 man hours.

Results obtained with the 10,000 and 40,000-mile inspections were so satisfactory that it was decided recently to again jump the mileage interval. This time to 15,000 and 45,000 miles. The order making this latest change effective was issued June 25, 1932.

While it is still too early to determine the full effectiveness of the new plan, there are numerous evidences that, before the Winter season is ended, the system will be producing the results expected in the way of more dependable operation and generally lower maintenance costs.

The inspection system consists of two general classes of inspections, namely minor and major. The former includes checking of valve tappets at 1,500 miles; oil filter removed and cleaned at 3,750 miles (same as the oil change), and wheels pulled and repacked with grease at 7,500 miles. All of the minor inspections are taken care of as part of the regular service floor work.

Major inspections, which include the 15,000 and 45,000-mile inspections, are taken care of by an inspection crew consisting of five regular employees. Ordinarily one inspection crew is able to take care of from 50 to 60 coaches. Any garage not having this many coaches assigned to it has this crew work the necessary days out of the month to properly take care of coaches assigned to them. Garages having more than 50 or 60 coaches have one regular and one auxiliary crew to take care of the excess coaches.

The important thing is the major inspections must be performed by a separate and distinct inspection crew and under no circumstances must these inspections be handled as part of the regular service work on the service floor.

The inspection crew consists of a mechanic who acts as the working foreman, one mechanic's helper, one electrician, one cleaner, and a body man. The foreman is responsible for the thoroughness of the crew's work. It is needless to state that considerable of the inspection's effectiveness will depend upon the ability of the working foreman.

To guard against careless or indifferent work, the garage superintendents are instructed to personally inspect each coach after the crew has completed their work. They must see that a definite standard is set up and maintained at all times. The coach must be mechan-

(*Please turn to following page*)

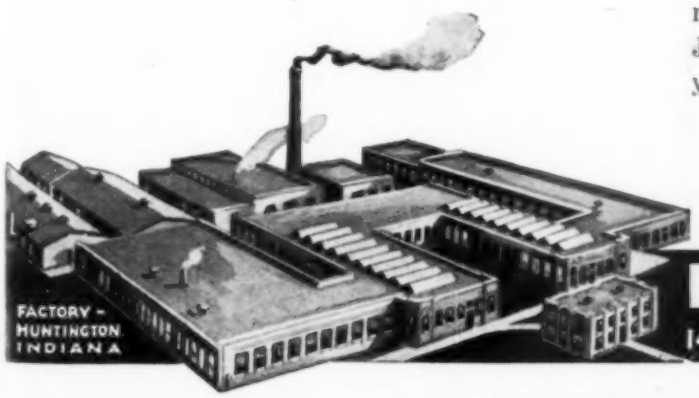
Give 2-Wheel Brakes 4-Wheel Power with Ebonite

Ebonite is a distinctly superior lining made to a radically different formula by a patented process. It contains far more compound (frictional substance), *has far greater stopping power than other linings. For this reason Ebonite is widely used by fleet operators to "step up" 2-wheel brakes of older equipment so that it may be safely driven in today's traffic; to "step up" 4-wheel brakes to power brake efficiency.*

Though much more powerful (higher friction) the pedal action of Ebonite is "soft" and smooth, and this satisfying braking quality holds constant 'till this lining is worn to wafer thinness. Because Ebonite contains more compound and less asbestos, it does not "glaze", over-dust or "fry". It gives greater mileage, minimizes drum scoring, reduces adjustments. (See our advertisement in the January FLEET OWNER). Ebonite comes in rolls, sets, blocks and special shapes.

Test Ebonite on a "Better brakes, lower cost or money back" basis

This is our offer to any rated fleet operator: Test Ebonite on one of your trucks, buses or cars—under your everyday working conditions. If it doesn't give you better brakes in every way and more mileage per dollar than the material you are now using, send back the used lining for refund. Just write the make and model of the test car on your letterhead and the name of your jobber.



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INCORPORATED
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BOOSTING BUS INSPECTION PERIODS (*Continued*)

The Unit Record Card accompanies the bus and furnishes a record of work performed.

ically O. K. and clean, both inside and out, when completed. All coaches are polished; this includes the polishing of the lacquer finish as well as all exposed metal work such as radiator shell, and air horns.

In cleaning the coaches, tar is removed from the panels, window sills washed, ceilings washed, all seats are vacuum-cleaned and the backs of seats are washed. Particular attention is paid to the front end of the coach, making sure that dash, instrument panel and floor boards are thoroughly cleaned and in good condition.

Each coach carries in an appropriate holder one Inspection Record Card and one Bus Unit Record Card. On the front side of the card holder, are three small label holders containing cards as follows:

"Check Valve Tappets At: .....miles. Change Oil and Clean Oil Filter At: ..... miles. General Inspection At: ..... miles."

The General Inspection Card also gives the mileage at which the next wheel repacking is due, in addition to the mileage for the next general inspection. Upon the arrival of a coach at a garage for service, the employee making up the service order only has to glance at the two cards to see when tappets are to be checked and when the inspections are due. •

The Bus Unit Record Card reproduced on this page, shows thereon the record of all unit changes as made from time to time. The foreman is held responsible for the entering of this information and the garage superintendent makes it one of his personal duties to keep a continual check of these cards to see that all entries are made in the proper manner.

If the Unit Record Card becomes lost, the garage superintendent immediately communicates with the General Maintenance Office at Cleveland and a duplicate card is made up from the records and returned for reinstallation in the coach.

Each garage superintendent keeps a record in his office of the inspections as they are made on each coach so that if the inspection record card should become lost, a duplicate can be made up and placed back in the coach.

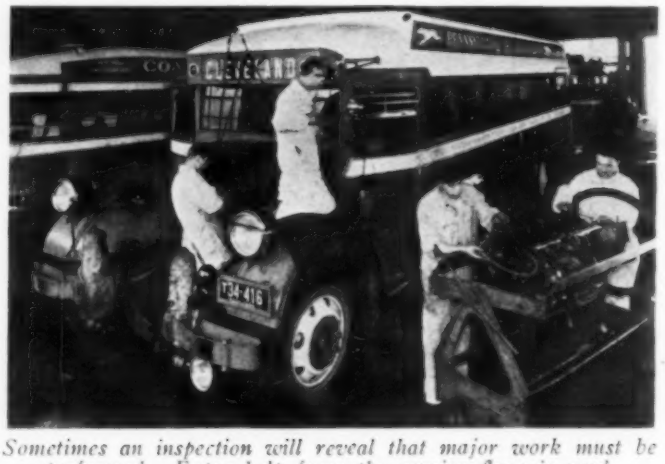
Each garage is supplied with a rubber stamp showing the name of the city in which the garage is located. Each of the small "General Inspection At" cards is stamped so that all other garages to which the coach may come will know who is responsible for previous work on that particular coach.

The working foreman of the inspection crew enters on the record the inspections as they are taken care of. He shows the mileage and garage at the top of each column and then marks an O. K. in each square underneath in the same column opposite the items taken care of. This eliminates the repetition of filling in miles and garage opposite each item.

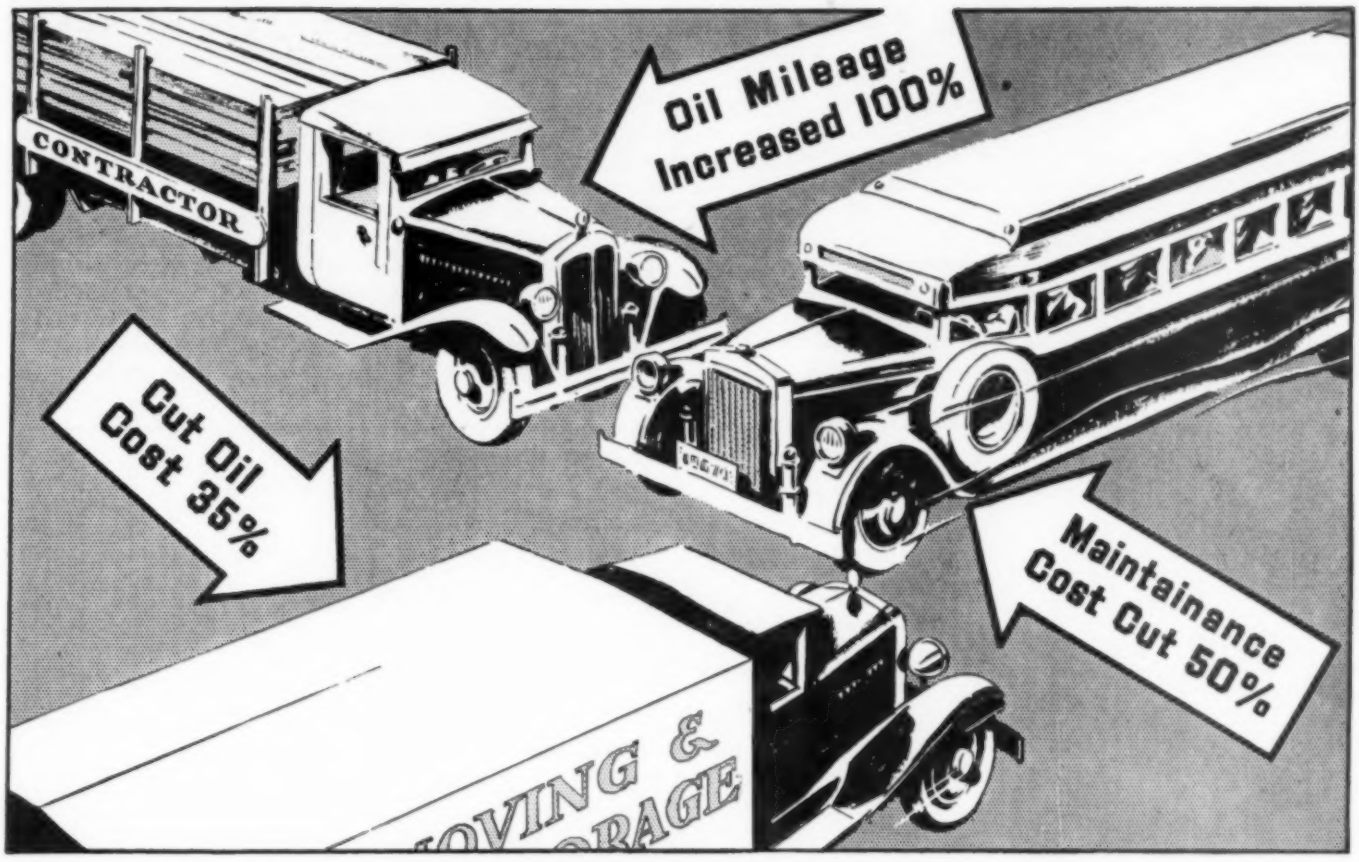
It is very important that the mileages on the bus drivers' report envelopes be correct at all times. Each garage has a set-up so that the envelopes can be checked by the gas man upon arrival of a coach to see that no apparent errors have been made. Each garage also has a mileage book set-up on their coaches and mileages are entered therein so as to permit correction of the bus report envelope mileages when necessary or to start the correct mileage on the new envelope in case the old one is lost.

It will, no doubt, be necessary for the inspection crew to put in a full day's time on each coach. It is almost impossible to properly inspect a coach in less time. In other words, there is enough work in one of these inspections to keep every member of the crew busy at least a day. During the 45,000-mile inspection, it may

After the inspection, everything is tightened, scratches are touched up, and the body is polished.



Sometimes an inspection will reveal that major work must be performed. Extra help from the service floor is used.



HUGE SAVINGS REVEALED BY RECORDS OF LARGE FLEETS

Oil and maintenance costs cut 35% to 62% by exclusive use of Tough-Film Pennzoil

STOP for a moment and figure the dollar and cents value of a 35% saving on the oil you buy in a year. Or add up your maintenance costs — labor, materials and overhead — and see if 50% of that figure wouldn't be a handsome extra profit.

Savings like these are being made by others right now. They're actual figures, from the private records of large fleets that have used other oils and then tried Pennzoil. Here are a few examples:

A motor express company: "On one regular route, we now use 2½ quarts of Pennzoil for the same mileage that required 6 quarts of our previous oil."

A large motor coach company: "Motor oil consumption 62% lower with Pennzoil, and maintenance costs lower than ever before."

A contractor (one of the largest in the country): "Oil consumption reduced 50% since changing to Pennzoil."

A large transfer line: "Have covered 2,500,000 miles in two years with Pennzoil, and have never had any expense due to faulty lubrication."

A large van company: "Pay a much higher price for Pennzoil than for oil formerly used, yet our records prove a 35% saving on oil."

A large transportation system: "Formerly used a low-priced oil. Changed to Pennzoil and cut maintenance costs 50%."

Hundreds of operators of large fleets have had similar experiences with *Tough-Film* Pennzoil. Hundreds of letters based on careful cost records prove that these savings are typical—and that you can save as much in the operation of your own fleet.

Tough-Film Pennzoil definitely cuts oil consumption because it's double-refined for toughness from pure Pennsylvania crude. It definitely cuts operating costs and reduces repairs because of its extra toughness. It provides a better power seal, reduces oil drag, and increases power.

Get the actual facts on oil performance. Let cost records of large fleets in your own business prove what Pennzoil can save you. Fill out and mail the coupon now for complete information.

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A "HOW-THEY-DO-IT" ARTICLE (*Continued*)

be necessary for the inspection crew to put in two or three days taking care of the inspections.

If, during an inspection, it is found that extra work must be performed, such as changing cylinder blocks, drive lines, or major units, such work should be done by extra help from the service floor crew. Inspections should, if at all possible, be completed in a day's time and necessary help should be assigned to finish in the allotted time.

A certain portion of each garage is assigned for the use of the inspection crew or crews. Garages equipped with work pits assign one of the pits for this work and the crews are equipped with necessary equipment to handle their work properly, such as creepers, high-lift jacks and wheel wrenches. To eliminate using the coach interior lights, a string of lights connected to the regular light circuit of the garage is supplied each crew.

In preparation for inspection, the coach is washed thoroughly and the engine is cleaned. This is very important as inspections can not be made in the proper manner if the engine and its units are covered with grease and dirt. The underside of the coach also is cleaned and all mud and deposits of grease removed.

Before commencing work, the previous service orders on the coach are checked for recurrent defects such as bad steering, overheating, body rattles, noisy transmission, etc. This gives the working foreman information as to the weak points of the coach, if any.

The gas and oil averages also are checked. This is exceedingly important, as an inspected coach with bad oil and gas averages is most assuredly not "inspected." Before dismantling any unit or removing any parts, the working foreman and body man take the coach out for a test run of a few blocks. The foreman observes the general mechanical condition and the body man notes all body rattles and loose fenders.

In most cases, it is unnecessary to assign a painter for full-time work with the inspection crew. The service floor touch-up painter or one of the regular painters does whatever painting is necessary under the direction of the working foreman.

The table above shows a detailed list of work done at the 7,500, 15,000 and 45,000-mile inspections. The 45,000-mile inspection consists of everything taken care of at the 15,000-mile period and in addition the items listed are inspected or overhauled as noted.

WORK DONE AT 7,500, 15,000 and 45,000-MILE INSPECTIONS

FRONT WHEELS AND SPINDLES

7,500 Miles:
Pull front wheels; examine bearings, oil seals.

15,000 Miles:
Pull front wheels.
Check brake mechanism in general.
Check king pins and bushings.

45,000 Miles:
Same as above and in addition:
Check brake diaphragms; replace if necessary.

STEERING GEAR

15,000 Miles:
Examine drag-link for lost motion, broken springs.
Check tie-rod for wear.
Check steering post for excessive wear.
Check steering gear arm.
Check post bracket.
Check wheel alignment.
Clean and check steering arms for cracks or flaws.

FRONT SPRINGS

15,000 Miles:
Check for broken leaves and eyes.
Check spring hangers and tighten.
Tighten U-bolts and spring clips.
Check air shocks, clean pistons, reprime, lubricate.

REAR WHEELS, SPRINGS AND BRAKES

7,500 Miles:
Pull wheels.
Examine bearings and oil seals.
Check brakes in general and repack wheel bearings.

15,000 Miles:
Same as above and in addition:
Examine rear springs.
Tighten U-bolts, and spring clips.
Check spring shackles and hangers.
Oil snubbers.
Examine brake linings and brake shoe springs.

45,000 Miles:
Inspect snubbers.
Examine brake diaphragms; slack adjusters, brake-cams, etc.

DRIVE LINES AND MIDSHIP BEARINGS

15,000 Miles:
Examine universal joints and midship bearings.
Check for grease leaks.
Replace all missing grease shields.

DIFFERENTIAL

15,000 Miles:
Check pinion shaft for back-lash.
Check pinion shaft oil seal.
Tighten differential carrier bolts.

45,000 Miles:
Pull out and overhaul differential.
Replace differential oil seals.

AIR LINES AND CONNECTIONS

15,000 Miles:
Examine all air lines, clean out and replace any that show excessive wear or abrasion.
Check air pressure to diaphragms with master air gauge.

TRANSMISSION AND CLUTCH

15,000 Miles:
Check transmission for loose bearings.
Check clutch adjustment and pedal clearance.
Grease clutch pilot bearings.

45,000 Miles:
Remove and overhaul transmission.
Remove clutch and overhaul if necessary.

ENGINE

15,000 Miles:
Grind valves and clean carbon (If Necessary).
Check compression on all cylinders.
Clean oil cooler; check for leaks.
Clean oil pump screen.
Check oil pressure.
Check and repack water pump.
Oil Harmonic balancer.
Check spark plugs.
Tighten motor supports and cross members.
Inspect air compressor and chain.
Replace all imperfect hose connections.
Check fan belts and fan assembly.
Check loom on flexible oil lines.
Tighten manifolds, etc.
Check motor over in general.

45,000 Miles
Remove oil pan and clean.
Check main and connecting rod bearings.
Pull pistons.
Check cylinder walls and piston clearance.
Check oil lines and oil pump.
Overhaul air compressor.
Check timing chain assembly.
Check flywheel for cracks and broken gear teeth.
(Motor should be removed from frame for the 45,000 mile inspection.)

ELECTRICAL SYSTEM

15,000 Miles:
Check plug wires; replace if necessary.
Remove distributors; overhaul; repack with grease.
Check generator thoroughly.
Check and lubricate starter.
Check starter switch and connections.
Check batteries, battery switch and cables.
Check voltage regulator.
Check all wiring for loose connections.
Check all wiring and replace all imperfect.
Check all lights and light sockets.
Check horn, heater fans and windshield fan.

45,000 Miles:
Remove generator, distributors, regulator, starter, coils and condensers; completely check and overhaul if necessary.
Remove generator fuses; clean clips.

GASOLINE SYSTEM

15,000 Miles:
Remove fuel pumps; overhaul used pump; check spare.
Spare pump is to be placed in the rear position and hooked up as standard.
Clean gascolators.
Check and clean all lines from carburetor to gas tank.
Check gas tanks for water.
Clean carburetor jets and check for size.
Check carburetors.
Clean air cleaners and straighten louvres.
Check gas tanks and lines for leaks.
Check vacuum tank.

EXHAUST SYSTEM

15,000 Miles:
Check exhaust system for leaks and make necessary repairs.
See that exhaust pipes and muffler are securely anchored.

SPEEDOMETER

15,000 Miles:
All speedometers must be in working order to comply with state laws.

TOOLS

15,000 Miles:
Jack must be inspected and tested.
Pyrene guns should be tested.
All equipment, flags, flares, torches, crank, tire wrench, broom, and any other equipment must be in first class condition.

BODY

15,000 Miles:
Check and tighten all outriggers.
Check doors and oil door hinge pins.
Check windows; replace broken glass.
Oil window frames with vasoline.
Tighten window eaves.
Check and repair all places where body or roof may leak.
Check and tighten windshield.
Straighten or replace dented or damaged panels.
Replace broken hood hooks.
Check and make necessary repairs to deck covering.
Tighten fenders; tighten bumpers and brackets.
Tighten floor boards.
Check rear grills and ladder.
Check all body and frame bolts.
Check baggage racks and shock cords.
Check for broken seat springs, protruding nails or screw heads.
Check seat buttons and seat elastic.
Check seats, upholstery, inside panels, etc.
Check curtain rods, tiebacks, etc.

CLEANING

15,000 Miles:
Clean inside ceiling, under baggage racks, windowsills, window frames inside and out, front dash, floor boards, leather trimming and upholstery, window frames, etc.
Scrub floor.
Remove tar and grease from body and seats.
Vacuum-clean seats.
Clean curtains, if necessary.

More than a Jack — A PORTABLE POWER UNIT

AS a lifting jack alone, a Blackhawk Hydraulic pays its way in any fleet shop or on the road — saving valuable minutes every time there's a load to be lifted.

As a *portable power unit*, the Blackhawk is indispensable. Straightening frames and axles, installing motors and transmissions, pressing gears and bushings — all are "down the alley" jobs for Blackhawk Hydraulics. They give you tremendous power, easily and safely controlled—with micrometer accuracy. And they are never out of order.

Send the Coupon for data on this complete line of hand and floor jacks—all hydraulic—in capacities from one to 75 tons . . . (Jack shown is CB-9—an all-purpose 7 tonner.)

BLACKHAWK HYDRAULIC JACKS

BLACKHAWK MFG. CO., Dept. FO-2, Milwaukee, Wis.

Send data on ☐ Hand Jacks, capacity.....tons; ☐ Floor Jacks. Check which.

Name .....

Shop Address .....

Preferred Jobber .....

This Business of

Motor Vehicle Fleet Operation

By E. E. La Schum,
Manager, Automotive Department, Railway Express Agency, Inc., New York City

Article II—Keeping Records of Motor Truck Maintenance

THE objects of successful fleet maintenance are twofold ones.

First, to keep existing equipment continuously serviceable with minimum expense.

Second, (and of equal importance) to build an indelible record for guidance, to be followed by the all-important question of major repairs and certainly to be carefully studied when the very important question of condemnation and replacement comes up.

The old axiom, "an ounce of prevention is worth a pound of cure" is as applicable to motor vehicle maintenance as to anything else, and may be termed the key-note of any maintenance program.

The man in charge must be a manager. He may not be an outstanding engineer, chassis designer, body designer or transportation expert nor an expert mechanic, painter, accountant, nor purchasing agent, but the vehicles under his control must represent the coordinated best efforts of each of these.

It is not the privilege nor would it be good business for the average maintenance manager to indulge in experiments which have been too often tried, but he should have an excellent knowledge of what not to do.

We cannot take a truck suited to city pick-up and delivery with high tonnage, capacity (but low powered because of low speed service) in short haul, frequent stop work, and set it out on a high speed job between New York and Chicago.

Any of us could write a story of how a truck in fleet maintenance may enter the shop through the wash rack and come out through the paint shop but I doubt if any of us could write a story that would exactly fit the other fellow's conditions.

Maintenance is nothing more or less than suitable housing, tool and stock facilities, plus personnel. Housing is generally garage and shop combined. Location is next of importance.

CHART A—TRUCK MAINTENANCE RECORD

Make	Model	Tons Cap.	Date in Service	1930 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1931 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1932
A	10	1	1-10-28			X																						
	10	1	"				X																					
	20	2	6-1-29						/																			
	20	2	"							/																		
	20	2	"					/																				
	30	3	8-15-30											/							/							
B	M	3½																										
	N	3½																										
	O	5																										
	P	7½																										
C																												

KEY*
/ Ordinary Running Repairs
X Overhauls

We have found that a chart record of repair jobs to each truck is of great value in scheduling shop work.

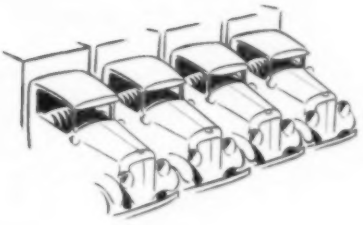
Our maintenance superintendent has in his office before his eyes a record similar to Chart A. A glance at this chart shows the complete repair history of every truck, every group of trucks, every make and model.

The superintendent knows when each truck was overhauled, when it was in the shop for ordinary or running repairs and when it is about due again. By anticipating an overhaul job or holding it off for a week or so, he can keep the shop working steadily with no peaks of hard work and no valleys with little work.

(To be continued in March)

A Series of Practical Fleet Maintenance Articles Prepared from a Paper Recently Read Before the S. A. E. Transportation Meeting

FOR GREATER EFFICIENCY AND ECONOMY THRU THE human factor IN FLEET OPERATION



MODERN motor vehicles and modern tires represent a remarkable tribute to present-day automotive and tire engineering. But their *care* is still up to the user. Practically every tire today will faithfully fulfil its promise of safety and maximum mileage IF the air in it is kept at the recommended pressure.

The more convenient it is to inflate and air-gauge tires the less likely drivers and service men are to neglect these important details. Consider this *human factor* in the economical operation of your truck, bus or delivery car fleet. Equip the valve stem of every tire with a Schrader Dublchek Valve Cap, and you make inflating and air-gauging as easy as turning on a water tap!

Schrader Dublchek Valve Cap (No. 7006)

replaces the ordinary dust cap and valve cap. It's a cap and the equivalent of an extra valve—both. Affixed *permanently* (with a pair of pliers), it rarely if ever becomes lost or mislaid. Nothing to unscrew. Nothing to put back. Four time-wasting operations saved on each tire.

Simply snap on the air chuck, and the air shoots in—right through the Dublchek. Applying gauge is equally simple. The extra protection in the Schrader Dublchek doubles the assurance against loss of air through the valve stem. Even should the inner valve, or core, become damaged, the Schrader Dublchek is a thoroughly efficient stopgap. Guaranteed air-tight—even under as much as 250 lbs. pressure. In addition, Dublchek is an effective guard against dust, dirt and grit.

Under-inflated tires on a fleet of motor vehicles can squander money like a prodigal heir. Dublcheks will help check the waste. They yield an incalculable profit on the trifling investment they entail. Your regular source of supply has, or can obtain, Dublcheks for you. A. Schrader's Son, Inc.—*Makers of Pneumatic Valves since 1844* — Brooklyn, Toronto, London.

TIRE VALVES **Schrader** **TIRE GAUGES**

Reg. U. S. Pat. Off.

BE SURE IT'S A SCHRADER — LOOK FOR THE NAME

Say "I saw it in FLEET OWNER"—It Helps!

An Interview with

Jack McBroom, Maintenance Mgr.,

The Good Humor Ice Cream Company, Los Angeles, California.

How One Man Services a 51-Vehicle Fleet

Believe It or Don't, But One Man Does Most of the Maintenance Work on this Standardized Fleet of Good Humor Ice Cream Trucks

ONE man does most of the repair work on the fleet of fifty-one automobiles operating out of the garage of The Good Humor Ice Cream Company, 6601 Santa Monica Boulevard, Los Angeles, California.

The first method of simplifying maintenance here as elsewhere has been standardization; one type of truck, (in this case the Chevrolet) being used. Exchange motors are kept on hand and in perfect order and these can be installed in one night with the help of the maintenance manager himself or one of the oilers.

Outstanding among the time-saving plans we have effected is that of tearing down and putting together the rear-end assembly. This is done without taking the mechanism out from underneath the body. The job is completed always in less than two hours, while factory suggestions make a job of twice that length of time.

After all running service operations are done each night, the trucks are lined up diagonally, as shown, to facilitate easy exit in the morning.

In doing this work, the rear-end is jacked up about eighteen inches. A stand resembling a wooden horse is placed under the frame on each side immediately in front of the spring. The bearings on the drive-shaft are examined and if they are O. K. the drive-shaft is left undisturbed. If there is any doubt, then the three lock-ring screws are removed and the shaft pulled out.

In re-installing the drive-shaft, the lock ring is wedged into place with a thin piece of ordinary radiator hose. The thickness of the hose must be correct to hold the ring in proper position. Metal used for this purpose would of course invite danger. Tape used for this purpose, we have found, invites another danger, for it has been known to cut off lubrication to the double-row bearing.

Our fleet mechanic accomplishes much more than the average mechanic by doing the necessary repair jobs first. The others he classifies in his book from the information taken from the drivers' daily trouble cards. It may be that two or three days will pass before he gets to an operation that is necessary but not immediately needed. Ordinarily, however, he is two jumps ahead of his drivers' suggestions, rather than two jumps behind.

This company owns none of the tires used but has them all on a rental basis. If the fleet were larger we could employ a special tire man profitably, no doubt, and own our own tires. If the fleet were smaller we could work tire care into our schedule some way perhaps without increasing the force, but any fleet of medium size, we feel, can be operated for less rubber cost when tires are rented on a mileage basis, than when purchased outright. This is only our opinion, of course.

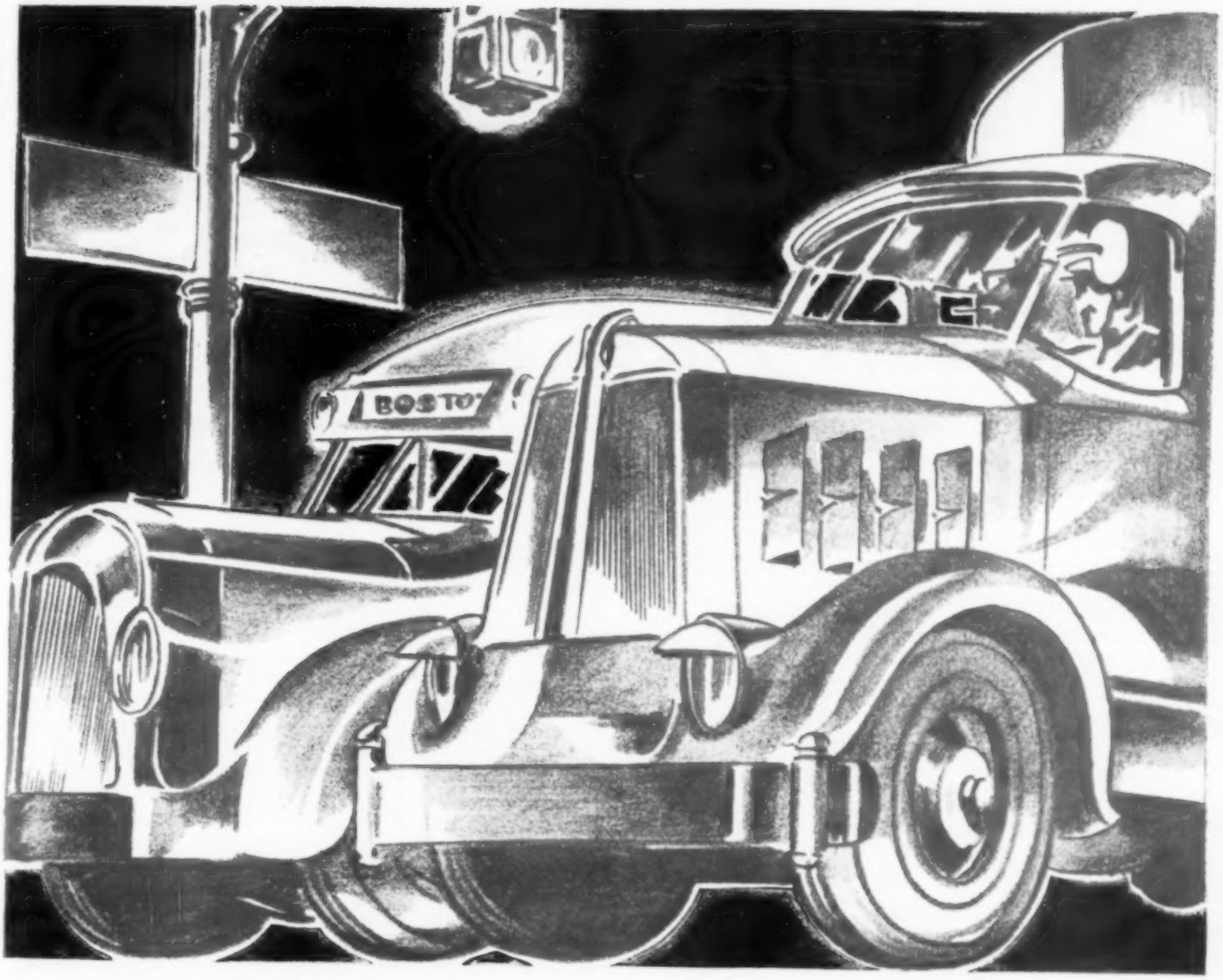
There are several reasons. The first one is this: the man who comes here every morning is a tire specialist. He works on tires all the time and so knows his stuff from A to Z. Naturally, our own man, having several other mechanical operations to keep in mind, can not become a supreme specialist on tires.

Here is another point: the owner of these tires knows exactly how to get the greatest mileage through retreading, etc. Tires are retreaded when they should be. If we were doing it, the chances are we would let them run too long before re-treading; that is human nature. As it is, we are never driving on thin rubber. Daily morning inspection by the owner assures our drivers of a clean slate each morning.

Oil changing is done systematically and in short order at our garage, thus relieving the fleet's mechanic of any fuss and worry. Here is the system: Two men work together. The first man places six six-quart empty cans under six cars, one after another and turns the drain-cock as he does so. By the time he has placed the sixth can, the second man comes on the scene with his big portable metal barrels.

This man empties the drained oil from car Number One into the container and shoots the emptied six-quart can by a well directed movement along the floor to Car Number Seven. He re-fills the crank-case on Car No. One, then empties the drained oil from Car Num-

(Please turn to page 38)



FOREMOST in the field of HEAVY MOTOR TRANSPORT

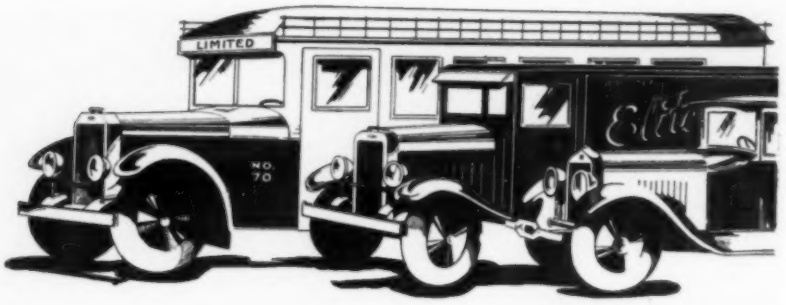
New conditions bring new problems — new solutions — and *new recognition of the abilities of* THERMOID *engineers!* THERMOID *developments* are responsible for THERMOID leadership. Thermoid superiorities are responsible for the lowering of operating costs — the curtailment of costly tie-ups — the keeping of trucks and buses *out of the shop*—and *on the road.* Let Thermoid F-M-L Brake Lining —or Thermoid Brake Blocks contribute to the dependable, economical operation of your trucks or buses.

THERMOID RUBBER COMPANY, . . TRENTON, NEW JERSEY

Thermoid
BRAKING MATERIALS
MILES AHEAD OF THE NEED

Say "I saw it in FLEET OWNER"—It Helps!

By A. J. Brosseau, V. P.,
National Automobile Chamber of Commerce



The Industry's Accomplishments *in* 1932

A Resumé of Manufacturing, Selling and Operating Activities Which Shows That Trucks Were Important Factor in Transport Operations

THE motor truck has replaced the horse and wagon in the past decade and has extended the distribution radius of farmers, merchants and manufacturers. It has demonstrated its superiority over other transport facilities in hauling certain types of commodities. It has been adopted advantageously by railroads in store-door delivery service and in the replacement of non-paying lines.

Motor trucks have established themselves as indispensable units of the nation's transportation system, whether independently of, or interdependently with, other facilities.

Public attention will be further directed toward the motor truck when truck legislation will be introduced before nearly all of the 43 legislatures convening in regular session during 1933. The motor truck using public will challenge any legislative body which through lack of knowledge of the facts attempts to adopt unfair taxation and regulatory laws which would restrict truck use and, therefore, be contrary to public interest.

During 1932 a total of 237,500 trucks were produced by American manufacturers. This production represented a wholesale value of $238,000,000 or an average f. o. b. value of $776 per unit.

In past years, there has been a marked trend toward the elimination of motor trucks equipped with solid tires. Less than three per cent of last year's production had solid tires as standard equipment. Solid-tired vehicles are rarely seen on highways. Chiefly their operation is confined to city streets.

Like practically all industry, motor truck production has fallen off yearly since 1929. The 1932 production figure represents a decline of 46 per cent as compared with 1931.

Though production figures have been on the down grade, use of trucks has increased, indicating the economy and flexibility shippers have found in motor truck transportation for distribution of commodities in small lots.

Additional increases will be noted when business improves, and when the spurious claims of anti-truck interests are revealed in their proper light. Uncertainty has been created in the minds of potential users of motor trucks by the confiscatory laws adopted in some states on the basis of misconceptions. The impracticability of some of these laws has already been demonstrated to the public by the failure of efforts to enforce them. Procedure of a more constructive nature is being followed in other states.

Investigations are now being conducted by special groups into national and state transportation conditions.

Included among these committees are the *National Transportation Committee*, creation of which was urged by banks and insurance companies; the *Transportation Committee* of the *U. S. Chamber of Commerce* and the *Joint Committee of Railroads and Highway Users*, consisting of representatives of the two transportation groups.

It is hoped that through impartial committee investigations and by the actions of those vitally interested, legislation unfavorable to the new form of transportation will be prevented before it causes a serious impairment of progress towards a complete transportation service.

The recommendations of the *American Association of State Highway Officials* for uniform legislation affecting the size, weight, and speed of vehicles, will clear up some of the confusion which has been created by the lack of knowledge as to what should constitute the proper dimensions of highway vehicles in the interests of safety to other highway users and conservation of the roads. The adoption of the dimensions recommended by the highway officials and approved by the *U. S. Bureau of Public Roads* will, on the one hand, eliminate oversize and unsafe equipment, and on the other hand, discourage current efforts to so restrict motor truck sizes that their operation becomes unprofitable or uneconomical.

The adoption by all states of uniform standards will make it possible for trucks to operate over state boundaries as freely as private passenger vehicles now do.

The maximum limitations recommended in this new code of the

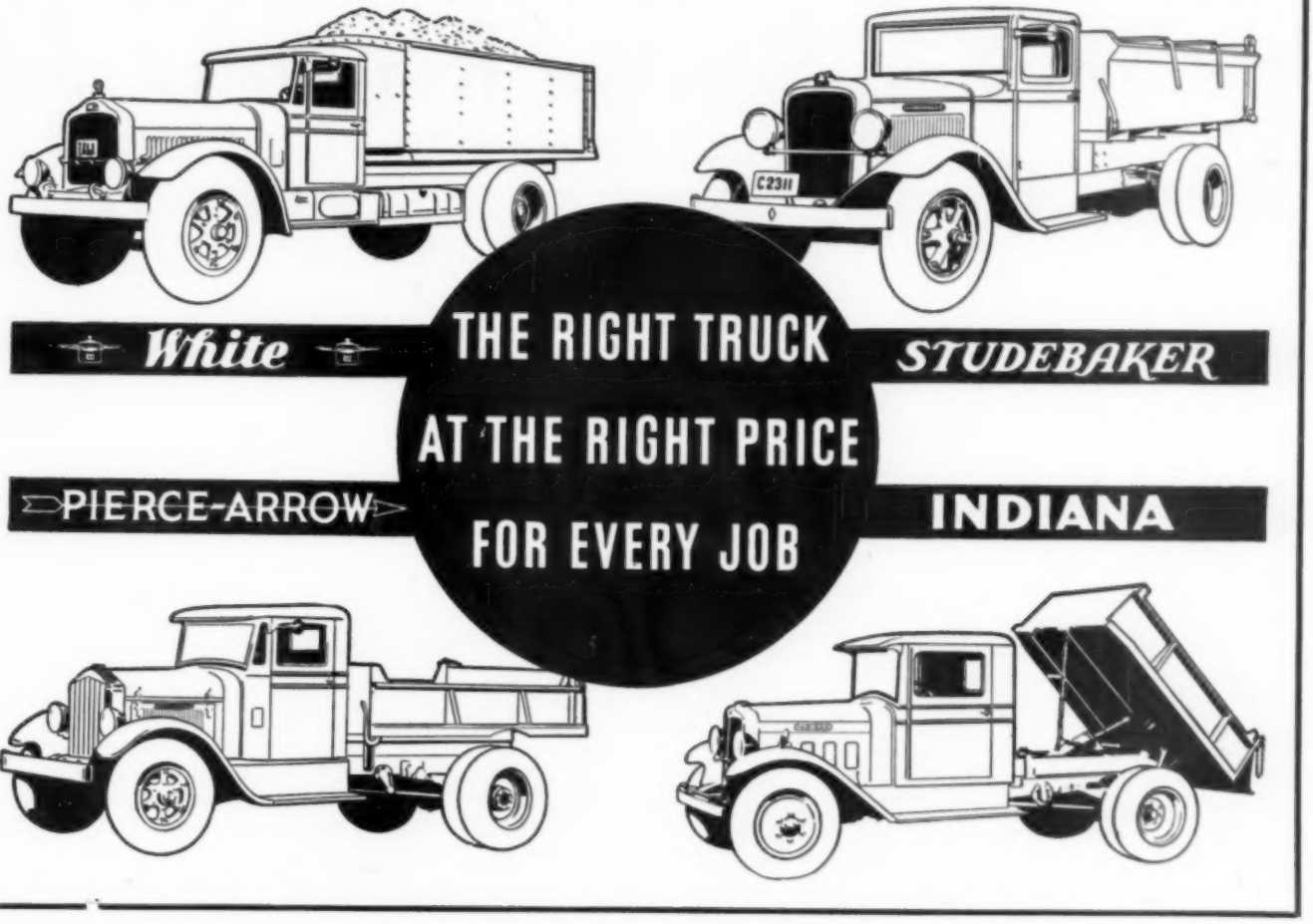
(*Please turn to page* 40)

SEEN AT A GLANCE:

- 1932 Saw Greater Use of Highway Carriers by Railroads.
- Shippers Still Have Control of Truck Transportation, Owning about 85.5 Per Cent of Trucks.
- Cooperative Effort Against Prohibitive Legislation Put Forth More Strongly in 1932.
- Motor Trucks are Among the Highest-Taxed Facilities in Operation. Hold that Tiger!
- Safety Record of Trucks and Buses Continues to Improve.
- Industry's Output of Commercial Units Declined 46 Per Cent in 1932.

Four Great Names

NOW UNDER A SINGLE BANNER



Now — you can go to one headquarters for every truck requirement. Under one roof you will find the most complete range of models and prices—*backed by* a combined reputation for performance and value without equal in the industry—serviced through the world-wide facilities of the vast network of White Factory Branches and Studebaker dealers.

The combined engineering and manufacturing experience of these leaders offers you the most for your dollar--the exact truck for your particular job. See the world's greatest line of trucks before you buy.

WHITE

25 chassis—1¼ to 9 tons—54 to 130 horsepower engines—$1700 and up.

STUDEBAKER

13 chassis—1½ to 4 tons—75 horsepower engines—power brakes—full floating rear axle—$670 to $1425.

INDIANA

13 chassis—1½ to 5 tons—75 to 125 horsepower engines—$885 to $4800.

PIERCE-ARROW

35 chassis—2 to 10 tons—13,000 to 75,000 lbs. maximum gross weight — 70 to 150 horsepower engines—$1950 to $7550.

SOLD AND SERVICED BY WHITE BRANCHES AND STUDEBAKER DEALERS

Say "I saw it in FLEET OWNER"—It Helps!

By
H. M. Williams

And
J. W. Carl

Helping You Select a Refrigerated Job

REFRIGERATED trucks are being used more extensively each year for the transportation of the perishable products of many industries. The refrigerated truck is indispensable for the delivery of ice cream, and it is therefore only natural that the manufacturers of ice cream have done a vast amount of experimental work. They have used all types of trucks and have tried practically every proposed method of refrigeration. The ice cream industry has pioneered the development and is still seeking the ideal refrigerated truck.

The transportation of meat, milk, fruits and farm produce also demands refrigeration. Trucks for these products are usually larger in size and utilize higher temperatures than those used for transporting ice cream. The delivery truck for butter, cheese, yeast, dough, etc., also requires refrigeration, but the truck is generally smaller.

Regardless of the kind or amount of produce being transported, the refrigeration problems are fundamentally the same. Refrigeration is required to overcome heat leakage of the truck body, losses due to opening of doors, and to maintain proper temperature of the material being transported.

The cost, weight and capacity of portable equipment demands the most efficient body construction and insulation, and the avoidance of unnecessary losses of refrigeration, due to door openings and the loading of warm materials. Articles being transported should be cooled to the desired temperature before being moved.

The construction of refrigerated bodies requires that the quantity and type of insulation must be given careful consideration. Best practice calls for six inches of corkboard or its equivalent for zero degrees, five inches for thirty, four inches for forty, three inches for fifty and two inches for sixty degrees Fahrenheit body temperature. The choice of insulating material must depend on its insulating quality; its form, in connection with the body design and construction; and ease of protection against moisture. Many good insulating materials are available on the market, and their insulating factors are easily and reliably obtained. These materials are furnished in block form, which have considerable rigidity, and in blankets which are easily applied but have no structural strength. Most materials utilize the well known principle of insulation based on confined air cells. Aluminum foil utilizes a new principle of insulation, namely, that of reflection. This material is very efficient and will no doubt be widely used on account of its light weight.

Regardless of the material used for insulation, it is very important that it be sealed, both inside and out, so that moisture cannot enter and destroy the construction and insulating properties. Insulation used in the floor must be capable of supporting the load or be so protected that it will not be crushed. The floor may be of hardwood or wood covered with metal. When considerable moisture is present, the sealed metal covering is more desirable, as it will stand more wear and will not retain objectionable odors. It is well to provide a drain in the floor to facilitate cleaning. Since cold air drops to the floor, it is advisable to have all drains fitted with a liquid trap or seal.

A splendid example of the modern trend. This is an all-aluminum insulated truck body, believed to be the first of its kind ever built. Use of the lighter metal made it possible to cut down the body weight by some 2,462 pounds. Blanket-type insulation was used.

The inside walls should be constructed of metal or odorless lumber, since such articles as milk, butter, and cheese readily absorb odors. Wood in meat trucks rapidly acquires the odor of smoked products. The outside walls should be made of ply-wood, ply-metal or metal. All of these materials have been satisfactorily used. The important feature throughout the body construction is to prevent any direct metallic contact between the refrigerated space and the outside atmosphere.

Allowance for the full amount of insulation should be made in building the top. If the top is crowned, the

The Continuing Increase In the Demand for Insulated and Refrigerated Truck Bodies Has Resulted in These Important Developments:

"We consider your Reclaimer most necessary for economical and efficient fleet operation.

It has made possible changing the lubricant at more frequent intervals, thus lowering our maintenance expense."

Ernest M. Dregalla

President of The Dregalla Trucking Co., Cleveland, Ohio, operating a fleet of 45 medium and heavy-duty trucks. It only costs them 10c per gallon for renewed oil since putting a Skinner Reclaimer on the job in their garage in 1929.

It's a fact, well known to dozens of fleet owners, that the quickest and most effective way to lower operating costs is to get a Skinner Oil Reclaimer on the job renewing used crankcase drainings—now perhaps wasted. Not only will a Skinner Reclaimer cut your oil costs 40% to 60% but engine maintenance is greatly reduced. More frequent oil changes, less wear and tear on equipment cuts operating costs for hundreds of Skinner owners. Use the coupon and find out exactly how a Skinner can lower your fleet operating costs. No obligation!
SKINNER OIL RECLAIMERS
TURN WASTE INTO PROFIT • TURN WASTE INTO PROFIT • TU

MAIL THIS COUPON WITH YOUR BUSINESS LETTERHEAD

SKINNER MOTORS, INC., Pioneers in Oil Reclamation
2229 Dalzelle at 14th St., Detroit, Michigan

Please send us, without obligation, complete information about Skinner Oil Reclaimers. Also tell us definitely with facts and dollar-and-cents figures what a Skinner Reclaimer will save us in cash and oil.

We purchase approximately ..... gallons of oil per month.

We drain approximately ..... gallons of oil per month.

We pay ..... per gallon of oil.

Our electric current rate is ..... c per kilowatt hour.

Signed ..... Position 2-3

DAY • MAIL THIS COUPON TODAY • M

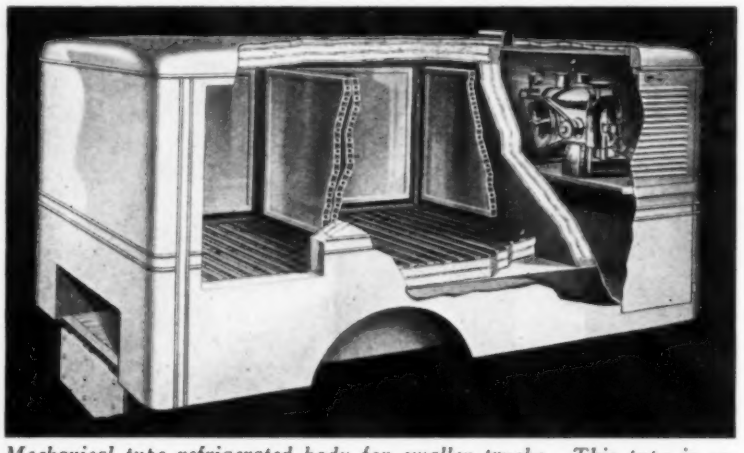
SELECTING *the* REFRIGERATED TRUCK *(Continued)*

A Dry-Iced Trailer

THIS refrigerated semi-trailer is kept cool by means of solid carbon-dioxide, with the Icefin conduction system. It is now in daily service transporting perishables over long distances. Aluminum was used, also, in this job, for body framework and paneling, as this metal seems to reflect exterior heat, in addition to its light weight.

extra inch or so available should be insulated. The top is exposed to the direct rays of the sun, and temperatures as high as 140 degrees have been found on this surface. Coverings having a high reflective value are quite desirable.

Careful attention must be given to the construction and number of doors. The very minimum of doors and openings should be used. Every door added means a loss of refrigeration; gaskets flatten, latches loosen, hinges sag, and doors are often left open unnecessarily. Care must be used to break all metal contacts between the inside and outside of the door by proper hardware construction. Such contacts cause sweating which results in corrosion and disintegration. The finest looking bodies are marred by rust streaks appearing around the door. The use of non-rusting metals is recommended. In the case of low temperature bodies, provision should be made to prevent water running into the top of the door which will tend to freeze it closed.



Mechanical type refrigerated body for smaller trucks. This type is especially adapted to transportation of ice-cream, frozen meats, fish, poultry, fruits, etc.

Provision should be made for the mounting of ice containers or refrigerating coils at the time the body is designed. The exact type of coil hangers or supports should be known so that their location can be definitely planned and rigid mountings assured.

The oldest type of refrigerating system used in trucks utilizes ice or salt and ice. The ice is either crushed or used in blocks; it may be distributed in the material refrigerated or placed in containers. Plans are often built into various parts of the body and utilize fins or other devices to increase the surface. The moisture formed is often objectionable, as it may seep into the insulation and cause deterioration. Whenever it is necessary to use salt to obtain lower temperatures, the resulting brine is very objectionable as it corrodes metal parts, shortening their life.

Containers filled with eutectic solutions are used for truck refrigeration. These systems present certain advantages and have numerous applications, although they are limited on account of the necessity of precooling and handling charges.

More recently, solid carbon dioxide has come into much prominence in truck refrigeration. It offers advantages over ice in that much lower temperatures are attainable. It has twice the cooling value per pound and its change of state in cooling is from solid to gas instead of from solid to liquid. The fact that it produces such a low temperature makes the control of body temperatures difficult. Many types of construction have been used to distribute and control the refrigeration effect. The most recent system utilizes the double refrigerant principle by which the solid carbon dioxide is used to condense a secondary refrigerant such as methyl chloride or dichlor-

(*Please turn to page* 38)

A Mechanical Job

THIS ice-cream truck body is refrigerated by means of a mechanical refrigerating unit, operated by a new type of constant speed drive transmission unit. Blanket type insulation is used. The body itself is panelled with Plymetl and has hard-wood framework of the staggered post construction type.

60,000 Miles *with* J-M Brake Blocks

The Garden State Lines cover 952,600 miles yearly—handle 4,000 passengers a day.

...This Time in congested Intercity Traffic

"After trying out several different makes, we have standardized on J-M Brake Blocks. They give us consistently high trouble-free mileage, averaging 60,000 miles per set on rear wheel brakes and as high as 120,000 miles on front wheels."

"And," *says Mr. I. H. Davidson, Vice-President and General Manager of Garden State Lines,* "the blocks wear evenly, have a soft brake and do not score the drums."

THE 35 buses of the Garden State Lines put Johns-Manville Brake Blocks to a grueling test! Their 16-mile route takes them through the heavy urban and interurban traffic of Jersey City, Passaic, Princeton and adjacent busy New Jersey towns.

In such service, sure dependable brakes are of paramount importance. It takes brake materials of the highest quality to deliver the mileage records that the Garden State Lines have run up. And it is brake service like this that definitely lowers bus operating costs.

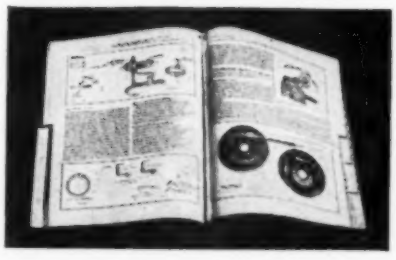
A Nation-wide Service to solve your brake problems

If your brake lining costs are running high or you think that you are not obtaining the mileage you should, call in a J-M brake expert. His advice and co-operation may save you money.

The brake experts of the J-M Transportation Department are located throughout the country. They know brakes and brake materials thoroughly. They are at your service to analyze your brake problems—to show you how to obtain safe, dependable, high-mileage operation at lowest costs.

Johns-Manville, in addition, offers you a nation-wide distributing system which assures prompt servicing of your buses wherever they are operating.

Send for this FREE book on brakes and brake adjustment

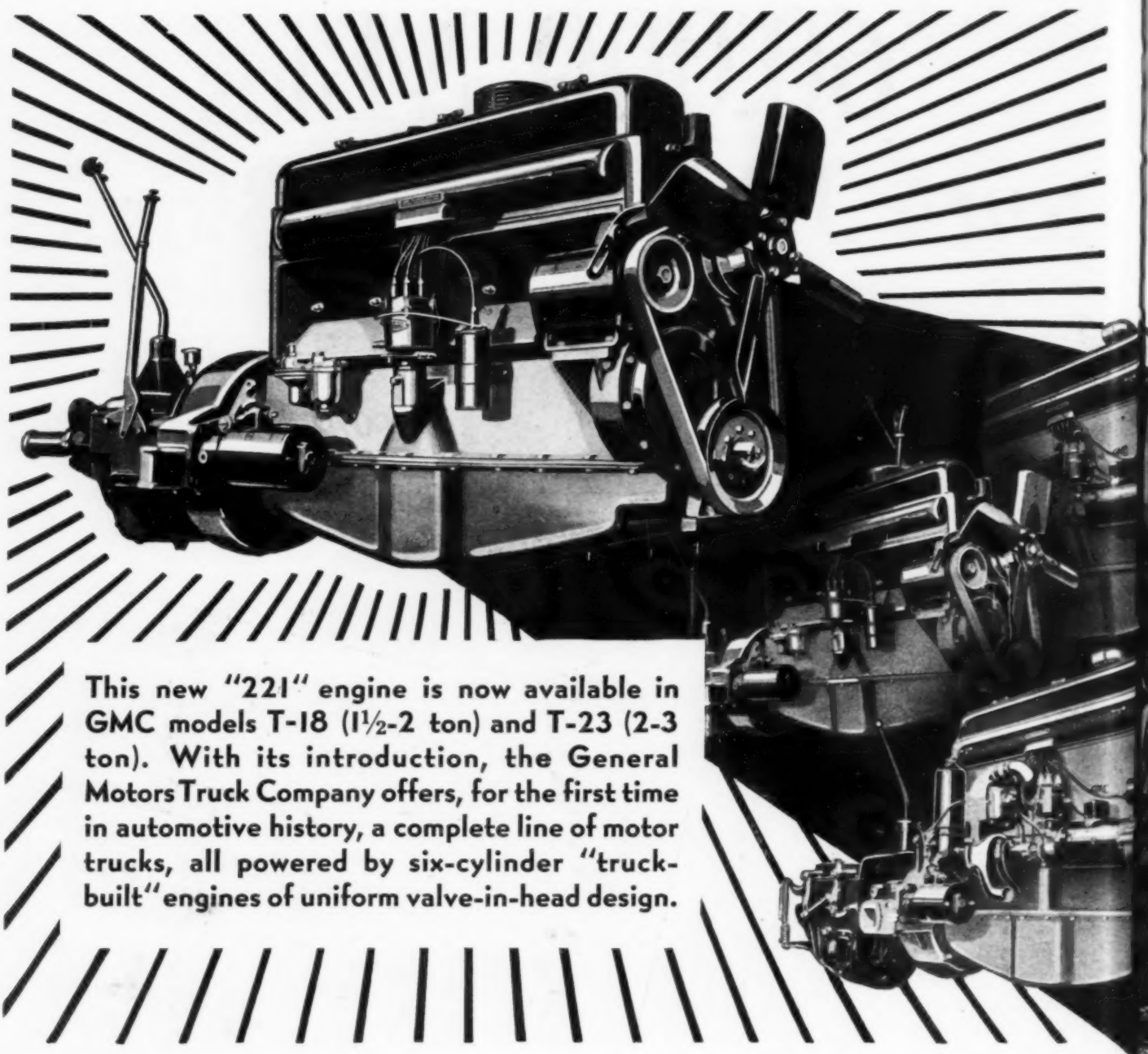


Here, for your use, are 124 pages of the most helpful brake information ever put between the covers of a book. Here are facts—facts on relining, adjusting, trouble-shooting. Facts that answer the brake problems you face every day. This book answers every problem connected with the servicing of brakes—and it's free. *Send for your copy.* Address Johns-Manville Transportation Department, 292 Madison Avenue, New York City.

Johns-Manville

BRAKE BLOCKS

Say "I saw it in FLEET OWNER"—It Helps!



This new "221" engine is now available in GMC models T-18 (1½-2 ton) and T-23 (2-3 ton). With its introduction, the General Motors Truck Company offers, for the first time in automotive history, a complete line of motor trucks, all powered by six-cylinder "truck-built" engines of uniform valve-in-head design.

Features of the 1933 Engine Line

Eight great engines are pictured on this page. They range in cubic inch displacement from 221 to 707; in horsepower, from 69 to 173; and in torque, from 155 to 550 ft. lbs. They are uniform in design, uniform in the standards to which they are built, uniform in their ideal graduation of size and power; and they also possess in common, one great outstanding characteristic—unsurpassed engine efficiency—because every 1933 GMC engine provides more sustained torque per cubic inch displacement than does any other truck engine built.

Contributing to this spectacular achievement are many features of advanced engineering design and construction.

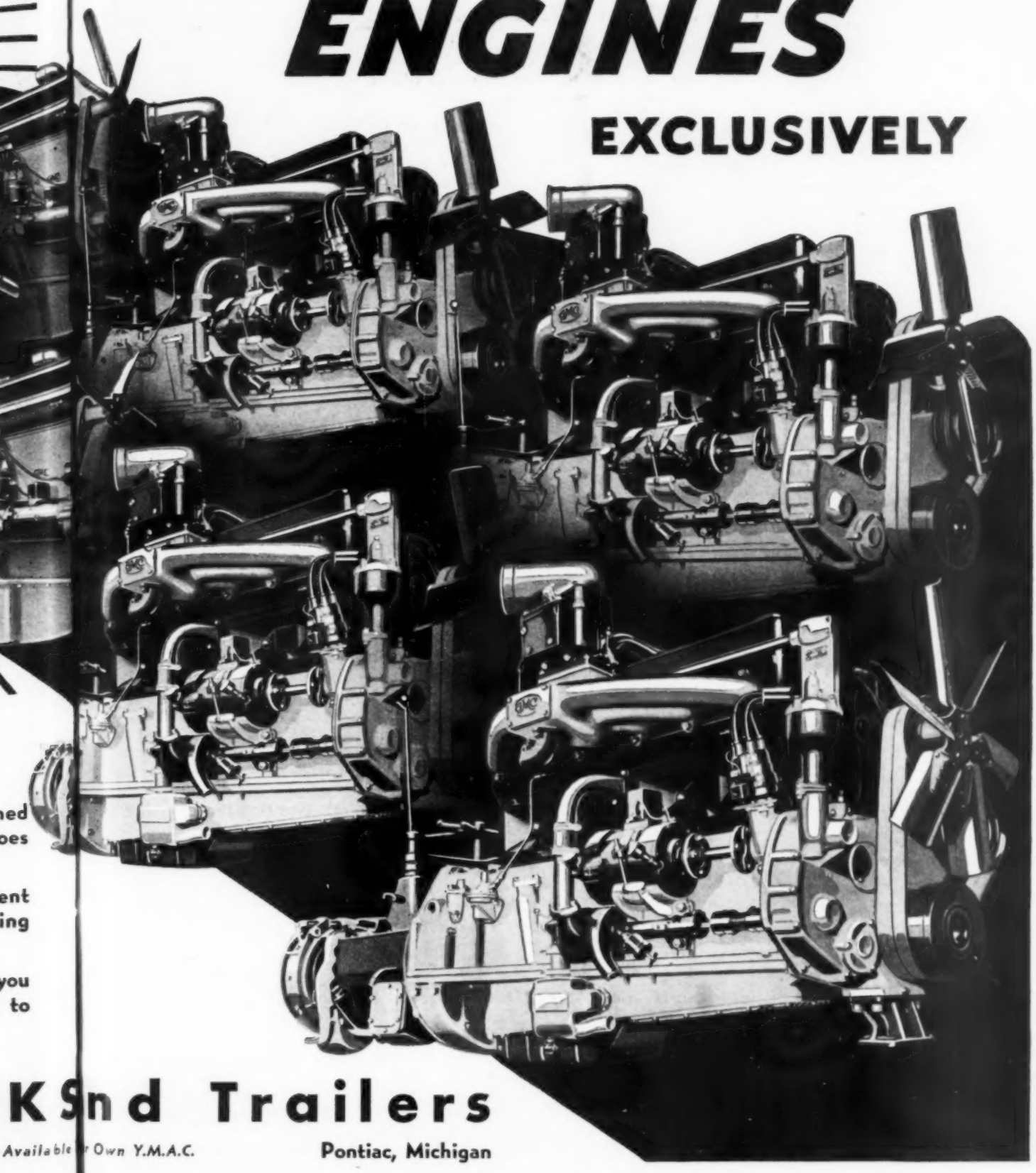
But only an actual demonstration can tell you how much these improvements will mean to you. Get that demonstration today!

GENERAL MOTORS TRUCKS

General Motors Truck Co. *(A Subsidiary of Yellow Truck & Coach Mfg. Co.) Time Payments Available*

Say "I saw it in FLEET OWNER"—It Helps!

POWERED BY "TRUCK GMC BUILT" ENGINES EXCLUSIVELY



K Snd Trailers

Available r Own Y.M.A.C.

Pontiac, Michigan

TROUBLE SHOOTER

(You Ask 'Em — We Answer 'Em)

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

Using the Right TYPE of Lining?

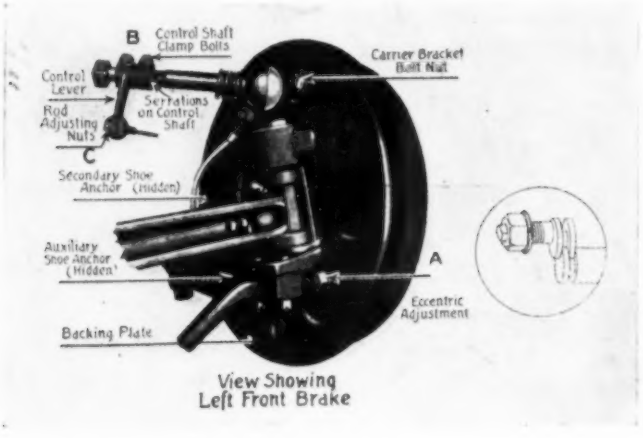
Question: We have in service in our fleet a 626 Packard which, after 20,000 miles, developed a peculiarity in one of the rear brakes. These are the 3-shoe Bendix type.

The left rear wheel will lock upon the slightest pressure of the pedal and, at times when a very careful application is made, the shoes chatter violently. Various methods have been tried to eliminate this trouble, but without success.

The wheel has been removed several times and the lining scraped and wire-brushed, although it showed not the slightest amount of grease or scale. This seemed to correct the trouble for about 100 miles, after which it seemed as bad as ever.

The linings appear as good as new and the drum is not scored and shows only about .002 inch wear. In addition to all this, no manner of adjustment has helped, as the car has been taken to several good brake stations using Cowdrey testers, etc. A stronger spring was even attached to the brake rod, to set up additional resistance, but it did not help. Can you offer any suggestions?—H. K., S. O. Co., Whiting, Ind.

Answer: Since you have had this job to good brake men, we will assume that proper adjustments have been made and that the brake shoes are correctly spaced and centered within the drum.



View Showing Left Front Brake

We do not know what kind of lining you are using, but troubles like you are having have been corrected by using *moulded* brake lining on the primary and auxiliary shoes and *woven* lining on the secondary shoe. (The secondary shoe is at the bottom.)

It is quite possible that your brake drum is slightly out-of-round. An eccentric drum would cause one brake to lock, even with light pedal pressure.

Since you have done so many things, this is about all we can suggest. Perhaps some of our readers can offer a remedy? If so, the Editor of this department will be glad to get your comment, passing the good word along.

●

Hupp Taxicab Shimmies and Shakes

Question: We are being troubled with a shimmy in the front wheels of a Century Six Hupmobile Taxicab. We have checked as we would in any other taxicab; put in new bolts and bushings, etc., but still the shimmy and shake is there. It seems that anything we do does no good. Is this a common trouble with this car and can you give us any hints? This car has been driven around 15,000 miles.—C. B. F., Vicksburg, Miss.

Answer: You fail to mention the speed at which this shimmy occurs. There are two types of shimmy, one at low speeds, which is due to the caster or tilt of the front axle; and the other at high speed. The dividing line is at about 30 miles per hour.

Under 30 m.p.h. you will find that shimmy is due to too much backward tilt of the front axle, or caster. This can be rectified by checking the amount, comparing it with manufacturer's specifications, and inserting shims to bring it back to normal.

On a high-speed shimmy the wheels and tires should be perfectly balanced. The shock absorbers should be checked for tension and evenness. It is often necessary to remove them and re-lubricate. On a double-action snubber one chamber may have an air pocket, and filling through the regular filling plug will not enable you to fill it properly, unless removed.

If this is not the cause of your troube, it may be necessary to stiffen up the front springs by removing excess lubrication from the leaves, or by adding an extra leaf; the latter has been found necessary on this particular car, we understand, from a wheel-and-axle man.

There is one other point. See that the drag link is lined up properly. If it is out of line it can cause both the high and low-speed shimmy. If the shackle is in front the drag link should be in a parallel position with the springs. If in the rear, line up the drag link so that the pitman arm ball, steering arm ball, and stationary I-bolt of the front spring are all three in line.

●

Two Suggestions from Mr. Bryan

TO the Editor: Referring to your question in the December issue, "is the motor hotter with the hood off?" The answer is No.

The opinion was prevalent for years that the sides of the hood, if left open, would cause a hot motor, the theory being that a partial vacuum in back of the radiator would not allow the fan to pull in its required capacity through the radiator.

In other words, the blank wall of the radiator face

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COST of operation depends largely upon the amount of gasoline and oil consumed which, in turn, depends largely upon the efficiency of piston rings, pistons and pins.

Genuine Sealed Power piston rings, pistons, pins and cylinder sleeves mean genuine economy because of the advantages *passed on to you.* Through proper coordination of parts plus field engineering and advisory service extended by one company through one system of distribution — you, as a fleet operator, effect savings in time, cost and operation.

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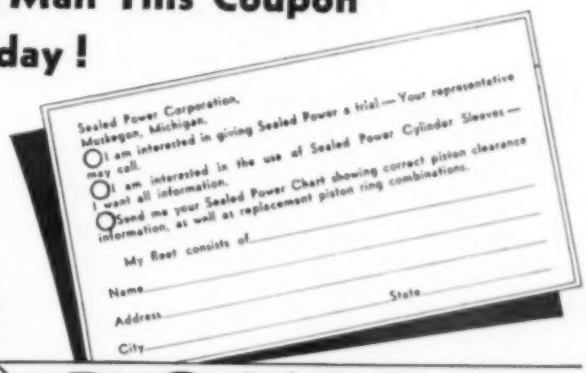
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SEALED POWER CORPORATION
Formerly The Piston Ring Company
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"SEALED POWER"
RESTORES NEW CAR PERFORMANCE

Say "I saw it in FLEET OWNER"—It Helps!

TROUBLE SHOOTERS' DEPARTMENT (*Continued*)

allowed the air to split up too rapidly in order to fill up the space surrounding the engine. Of course, we now know that an ever-increasing number of passenger cars and trucks are provided with large hand-operated doors in the hoods, and this seems to shoot the aforementioned theory full of holes.

A heated motor cannot have its heat increased by the sun, because, after all, the sun's heat is only whatever the thermometer reads at the earth's surface, whereas the motor may be at the boiling point, or above.

Hot motors are generally caused by poor water circulation, poor air circulation through the radiator (sometimes caused by bugs and dust on the fins), partially stopped hose, leaky pumps, worn pump impellers, deposits of rust in the jackets, too small a radiator, and last, but not least, a thin gas mixture on hot days and late timing of spark or valves.

With reference to another inquiry in the December issue, "Brake Pulls Truck to Right," it would seem to me that this is caused by the front axle being bent back at the lower portion of the axle yoke, at the right hand side, viewed from the driver's seat.—*G. Bryan, c/o Armour & Co. Philadelphia, Pa.*

Editor's Note: We thank you, Mr. Bryan, and are glad to pass your suggestions on to other interested readers, through the medium of this department.

How to Make a Deceleration Test

IN response to many inquiries for information on how to make a practical deceleration test of any vehicle's brakes, on the road, we are pleased to pass on the following information, suggested by a brake testing engineer. The personnel required to conduct a deceleration test consists of a driver and an observer. The test should be conducted on a dry, level road. Here is the procedure:

First: The car speed is brought up to 20 M. P. H. at which time the driver applies the lowest pedal pressure which will cause a slight rate of deceleration (approximately 2 ft. per second). The observer records the deceleration along with the pedal pressure (which is observed by the driver). The initial pedal pressure is then increased 5 pounds at a time until all four wheels slide. Each change of pedal pressure and rate of deceleration is recorded by the observer.

Second: The car speed is brought up to 40 M. P. H. and the above procedure is again used with the exception that the pedal pressure is increased 10 pounds each time. The car is brought to a full stop every time a brake application is made.

Third: At this time the car is run in reverse at a speed of approximately 15 M. P. H. and pedal pressures and deceleration rates are taken the same as during the 40 M. P. H. forward test. Pressures and deceleration rates are built up at this time until the two front wheels slide.

Fourth: At this time a fade-out test is taken to ascertain the action of the lining when subject to heat. The car speed is brought up to 45 M. P. H. and pressure applied on the pedal enough to give a 15 ft. per second deceleration. This is done eight consecutive times at intervals of exactly 45 seconds. The observer records at this time the amount of pedal pressure required to obtain the aforementioned rate of deceleration.

The equipment used for making a deceleration test consists of a pedal pressure gauge (which records the number of pounds applied to the brake pedal) and a decelerometer (which records the rate of deceleration).

A Practical Lubrication Schedule

Question: Your article in the Trouble Shooters' Department for November in regards to drivers' daily report form has been noted, and we are in need of a similar report. We have a fleet of 25 trucks used for the most part in the hauling of local freight with some long distance moving. Will you kindly give us anything that you may have in this line.

We are also in need of some data on a regular system of lubrication. Could you print a lubrication chart in an early issue, and give us any other information that you may have on same?—R. C. C., Rochester, N. Y.

Answer: We are sending by separate mail a collection of drivers' reports in use by different fleet operators. These no doubt will enable you to make one up to apply to your particular fleet.

LUBRICATION CHART

For applying the correct lubricant regularly and at definite intervals to the automobile chassis.

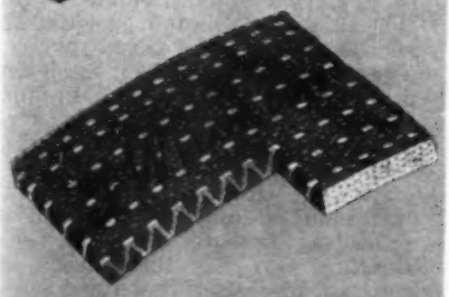
Element	Every day	Every 500 Miles	Every 1000 Miles
Engine Parts			
Oil Reservoir	Examine or replenish with engine oil.		
Fan Bearings	Engine oil or grease.		
Valve Stems	Engine oil.		
Water Pump Bear.	Grease.		
Magneto	Engine oil.		
Electric Starter		Engine oil.	Grease.
Clutch			
Lever Bearings of Foot Pedal		Engine oil.	
Thrust Clutch Bear.		Grease.	
Cone Clutch Leather Surface			Neatsfoot oil.
Multiple Disc Clutch			Clutch oil.
Transmission			
Friction Drive	Engine oil.	Grease.	
Gear Shift Lever		Engine oil.	
Gears		Gear oil.	Grease.
Planetary (Ford)		Oil supplied automatically by engine oiling system.	
Universal Joints		Gear oil.	Grease.
Differential			
Gears		Gear oil.	Grease.
Chain Drive			
Driving Chains	Gear oil.		Clean and soak hot tallow and graphite.
Sprocket Bearings	Grease.		
Steering Gear			
Knuckles	Grease.		
Rods	Engine oil.	Grease.	
Worm & Sector		Grease or gear oil.	
Top of Post			Engine oil.
Brakes			
All Bearings		Engine oil.	Grease.
Speedometer			Grease.
Springs			
Spring end and shackle bolts	Grease.	Engine oil.	Grease.
Wheels			
Front & Rear			Grease.

With reference to the lubrication system, we believe that the accompanying lubrication chart will be of value in formulating a lubrication schedule. It was suggested by E. C. Wood, Supt. of Transportation, Pacific Gas & Electric Company, San Francisco, Calif.

Raybestos HEAVY DUTY products

INTO every Raybestos Heavy Duty product, goes 25 years of heavy duty braking experience. Not theory, nor guess work, but practical knowledge concerning the actual requirements of commercial vehicle service.

This experience: this specialization: this knowledge has given to Raybestos Heavy Duty products their pre-eminent position. When you use these products, you obtain not only better braking, but other factors of equal importance. A large service and sales organization reaching out into every corner of the U. S. Complete stocks at strategic points. Reliable performance. Economy of operation. And, above everything else,—safety and long wear.



RAYBESTOS FW
Heavy Duty Lining

Designed on the "heat bridge" principle. Strands of large guage plastic metal run through lining from one side to the other. Strands are in direct contact with drum and lining surface at the same time. Heat radiates into shoe and adjacent parts assuring greater efficiency and long wear.

RAYBESTOS KNURLED
Brake Block

This block offers distinct advantages over the ordinary block. The knurled surface of Raybestos Brake Blocks causes them to grip instantly and seat quickly, providing smooth, even pedal pressure until block is worn in.

RAYBESTOS CLUTCH
Facings

Standard factory equipment on 98% of America's leading cars. Raybestos Heavy Duty Facings are especially designed for truck, tractor and bus service.

Use Genuine Raybestos Products for Replacement

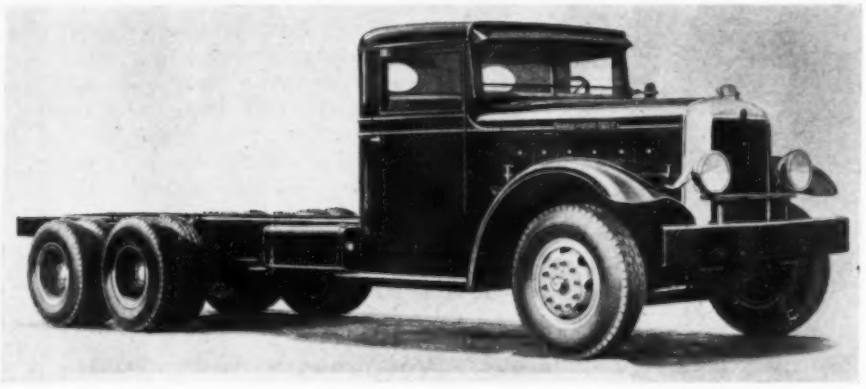
Warehouse Stocks in All Principal Centers

THE RAYBESTOS DIVISION
of Raybestos-Manhattan, Inc.
BRIDGEPORT, CONN.

Send for a Copy of "BRAKING"

An authoritative treatise on brakes and braking by Dr. Stanley, chief of Raybestos engineering staff.

G. M. T. ANNOUNCES TWO HEAVY ONES



EXTENSION of its line into the super-heavy duty field is announced by the General Motors Truck Company, Pontiac, Mich., introducing two new models, the T-110 and the T-130, with straight ratings of 40,000 and 50,000 pounds. The gross weight ratings provide a capacity range of from 8 to 12 tons payload on the T-110 and from 12 to 15 tons payload on the T-130, depending upon body weight and tire capacity.

The T-110 is a four-wheel unit equipped with a full-floating double-reduction type rear axle. The T-130 is a six-wheel unit having dual rear axles of the worm-drive, full-floating tandem type, with inter-axle differential. Equal division of load between the four sets of driving wheels is assured by equalizing beams and balanced spring suspension.

Both of the new models are powered with the G. M. T. 616 six-cylinder valve-in-head engine having a 4⅞ inch bore x 5½-inch stroke and 616 cubic inches displacement. The S. A. E. rating is 57.04 horsepower. This engine develops 149 horsepower at the governed speed of 2,100 r. p. m. while maximum torque is 450 foot pounds at 1,000 r. p. m. The G. M. T. 468 or 525 valve-in-head six-cylinder engines are optional at price deductions on either truck, and the G. M. T. 707, developing 173 horsepower at its governed speed of 2100 r. p. m., is available at extra cost.

Numerous options, adapting these trucks to special requirements in any sector of the heavy-duty field, are available on both the T-110 and the T-130. Salient features of both models include large-capacity radiator of flat-tube construction; heavy-duty double-disc clutch of multiple-spring design, with ball thrust release bearing; four-speed main transmission with shafts carried on ball and roller bearings; two large S. A. E. power take-off openings.

Amidship-type auxiliary transmission with under-and-over drive is standard and in combination with the main transmission provides 12 speeds forward and three reverse. The gears are of constant-mesh design with front gears of ground spur type, over-drive and under-drive gears being herringbone type. Propeller shafts are of tubular construction. Universal joints are all metal and oil-lubricated type. The roller bearing worm-and-sector type steering gear has three teeth in constant mesh in any driving position.

Straight channel-type frames of large section are used, reinforced with stress absorbers which distribute the frame stress at back of cab over a great area. These frames are especially adapted to ac-

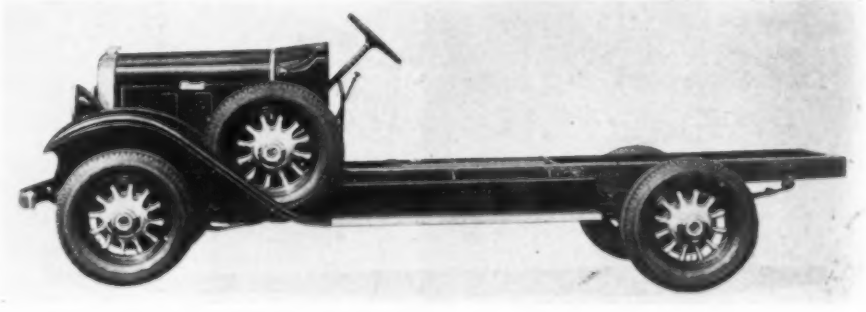
(*Please turn to page 34*)

A NEW ¾-TONNER BY STEWART

ANNOUNCEMENT is made of the Stewart Motor Corporation's new ¾ ton delivery truck known as Model 41X. The standard wheelbase is 124", suitable for bodies with a 7' loading space. A long wheelbase of 134", suitable for bodies of 8' loading space is also available.

The motor is a six cylinder, 3⅛" bore, 4½" stroke. Horsepower developed on block 56. Full pressure feed lubrication with constant pressure control for all motor speeds; removable cylinder head. Removable block. Crankshaft bearings bronze-backed. Connecting rod bearings integral cast-in type. Equipped with centrifugal water pump and thermostat.

The clutch is a single 10" dry plate type, equipped with vibration dampener. The transmission is the unit power plant type, four speeds forward and one reverse, bolted to the bell housing on the engine. Shafts mounted on annular bearings. Gear ratios as follows: Low, 6.40:1; Second, 3.09:1; Third, 1.69:1; Fourth 1:1; Reverse, 7.82:1.



The steering gear is the Ross cam-and-lever type, roller mounted with three-spoke wheel 17" diameter. The frame has pressed steel side rails, 6" deep at point of greatest depth on all wheelbases. Thickness of metal 5/32".

The front axle is the I-beam type, drop forged. Hubs are equipped with Timken roller bearings. The rear axle is of the truck type with single piece, cast steel housing, spiral bevel gear with straddled mounted pinion. Differential is mounted on Timken roller bearings. Axle shafts 1-15/16" diameter, nickel steel, semi-floating type, carried on Timken roller bearings. Standard gear ratio 5.4:1. Special gear ratio 4.25:1 at extra cost.

The service brakes are four-wheel, Bendix Duo-Servo, 12" x 1¾" front and rear, mechanically operated by the foot pedal. Hand brake connected to four wheel brakes. The drive shaft is a tubular shaft, 3" in diameter, equipped with grease tight joints.

The standard wheelbase is 124". Special wheelbase 134" at extra cost. The wheels are steel spoke demountable type with spare wheel. Chrome plated wheels furnished at extra cost.

A NEW *SUPER* SAFETY GLASS

The Libbey·Owens·Ford Glass Company announces an important scientific achievement—a new super Safety Glass which is safer, clearer and more lasting.

This super Safety Glass is now used in the windshields of the cars listed below.* In some of these cars it is standard in all windows as well. In others, it is available at such a slight increase in the delivered price of the car that motorists can no longer afford to drive an automobile without *this vital protection in all windows.*

This universal swing to Safety Glass on the part of passenger car manufacturers is a result of public demand for the protection it affords. It stands to reason that the public, insisting upon Safety Glass in privately owned cars, expects it in public carriers and vehicles for hire. Companies operating fleets equipped throughout with Safety Glass now have an even greater advantage than they had before. Public attention is focused upon windshields and windows. You can attract business by informing the public that your vehicles are equipped with Safety Glass.

* PACKARD · GRAHAM · STUDEBAKER · FRANKLIN · REO · WILLYS
FORD · CADILLAC · LA SALLE · LINCOLN · BUICK · CHEVROLET
OLDSMOBILE · PONTIAC · ROCKNE · AUBURN · CORD · CONTINENTAL

In addition to the cars listed above L·O·F Safety Glass is also used in Dietrich and Le Baron Custom Bodies, Reo Speed Wagons, Twin Coaches, Brill Trolley Buses, Cincinnati Trackless Trolley Coaches, Bender Bus Bodies, Hackney and Springfield School and Passenger Bus Bodies, White School Buses, York-Hoover School Bus Bodies, Crown School and Motor Coach Bodies, Ford School Buses, Stinson and Stearman Aircraft, Gar Wood Boats, Matthews Cruisers and Chris-Craft Cruisers and Runabouts.

LIBBEY·OWENS·FORD SAFETY GLASS

FEDERAL ANNOUNCES 1933 MODELS

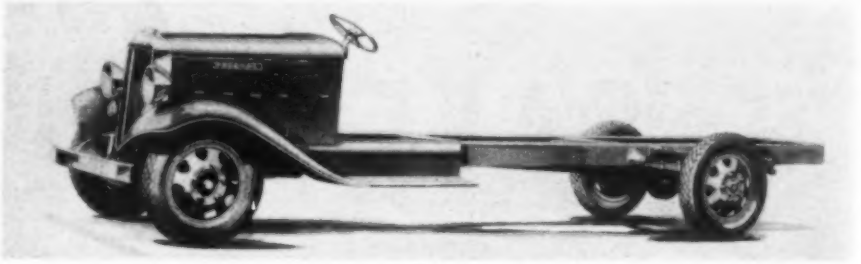
NEW models for 1933 are announced by the Federal Motor Truck Co., Detroit, Mich., which are stated to be "unusually attractive in appearance, of all-truck design, and embodying many important refinements." The following is a brief resumè of the new line:

The 1½-ton model is available with 4 and 6-cylinder engines in the following wheelbases: 130", 142", 154", and 166". The 4-cylinder power-plant, 3-⅞" bore by 4-¼" stroke, develops 50 h. p.; the 6-cylinder engine, 3-⅜" bore by 4" stroke, develops 64 h. p. at 2500 R. P. M. Standard tires are 6.00/20 6-ply balloon front and 32 x 6 high pressure rears, mounted on ventilated disc demountable wheels, with duals available at extra cost.

Other features of the 1½-ton Federal are 11" heavy-duty clutch; 4-speed transmission; full-floating rear axle; chassis frame 6" deep by ¼" thick with 2-¾" flanges; and four-wheel hydraulic brakes. The chassis weighs 3225 lbs.

Two other models of the new series carry pay-load ratings of 2-½ to 3-ton and 3½ to 4-ton, with gross ratings of 15,000 and 18,000 lbs., respectively. These models are powered by 6-cylinder engines. The one used in the 2½ to 3-ton vehicle, with 3-¾" bore by 4-¼" stroke, develops 72 h. p. at a governed speed of 2500 R. P. M.; that used in the 3½ to 4-tonner, with 4-⅛" bore by 4-¾" stroke, develops 84 h. p. at a governed speed of 2400 R. P. M.

These new Federals have single-plate clutches, 12" diameter on the 2½ to 3-ton model and 13" on the 3½ to 4-tonner. A special spring type dry disc is used in this clutch. The 5-speed transmission with which these vehicles are equipped, covers a broad range of requirements in power and speed. The first three speeds are spur-geared. The fourth is secured through constant-mesh helical gears. The fifth speed is direct drive. Both models have tubular propeller shafts with universal joints of the roller bearing type. A grease nipple is provided for lubrication every 25,000 miles.



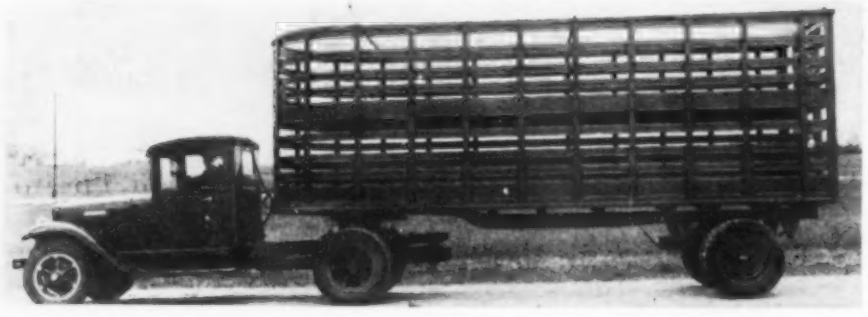
The chassis frame is of the fish-belly type with 10" section at the deepest part. Frame side rails are ¼" thick with 3-½" flanges. Front springs are shackled at the front. Rear end of the rear spring is floating contact type, eliminating shackles, spring pins, bushings and the necessity of lubrication. The Hotchkiss type of drive is employed.

Rear axle is of full-floating type, with spiral-bevel gear on the 2½ to 3-ton model and bevel or double reduction on the 3½ to 4-ton. Front axle has a wider tread than the conventional axle. This makes possible shorter turning radius.

Service brakes are of the hydraulic, 4-wheel fully enclosed type, actuated by vacuum booster. Emergency brake is single shoe, ventilated disc type. Tires on the 2½ to 3-ton Federal are 8.25/20, mounted on 20 x 7 cast spoke type wheels. On the 3½ to 4-ton Federal, tires are 9.00/20, mounted on 20 x 8 case spoke type wheels.

The following wheelbases are available in both models: 153", 163", 175", 185", 197", 210", 223" and 237".

A DOUBLE-DECKER RACK TRAILER



A NEW stock rack trailer has recently been developed by Highway Trailer Company of Edgerton, Wisconsin, and is illustrated herewith.

One of the interesting features pointed out by the manufacturer is the fact that this trailer body is a double-decker. The upper deck can be removed when necessary, for hauling large cattle and it can be used in double-deck form when hauling hogs, sheep and small cattle.

This job employs the Highway semi-trailer chassis, model 3*CYH-2. The chassis is 20½ feet long and is made up of the following equipment: Electric cast-steel wheels; Goodyear K-28 rims, interchangeable with the tractor; 32 x 6, 10-ply heavy-duty dual pneumatics; Bendix brakes, 16 x 2½ inches, operated by BK double booster vacnum; 24-inch lower Martin type, semi-automatic fifth wheel.

Body is a round-front, stock rack job, 20½ feet long, 7½ feet wide and 6½ feet high. The racks arrange so as to allow double decking. Rear end is equipped with a 3-foot removable gate in center, also a 2-foot sliding door on lower right corner.

This particular job is used in conjunction with an International Model A-3 tractor chassis, having a 136-inch wheelbase. Full particulars will be supplied by the maker, on request.

(*Continued from page 32*)

commodate the many special wheelbase lengths required in trucks of this class. Front springs are shackled at forward end with double-wrapped eye at rear. The drag link and springs move on about the same radius. Progressive type rear springs are used, with underslung mounting.

The T-110 rear axle of the full-floating double, reduction type has spiral bevel gear primary and herringbone gear secondary.

The *Outside* tells the *Inside* Story of

PLYMETL

YOUR eye knows long before you understand why that a PLYMETL body is substantial, roomy, attractive, and especially suited to its job. It looks right and it is.

The inside story explains these factors which make for body efficiency. It is a story of the development of PLYMETL in "lighter and stronger" body construction.

The rounded PLYMETL corners on the milk trucks shown above, may seem just an added touch of streamline beauty. Actually, they decrease wind resistance, allow close coupling, and increase loading space.

The attractively painted, sturdy PLYMETL panels which you see on the outside are only part of the story—for these insulated trucks are PLYMETL inside and out. Interior protection is essential with a load of milk cans, and PLYMETL provides it at no increase in weight. This, of course, is the innermost fact about PLYMETL—it is the "lightest and strongest" body paneling obtainable.

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87. No More Dirty Hands. If you are a "white collar" man, occasionally poking into rear ends and transmissions; or if you are an honest-to-goodness "grease-bather" who fusses with grease'n oil, we know that you will want a free sample of this product. It's a white cream, to be rubbed into the hands before starting to work. Besides protecting the skin against gasoline, battery acid, paint, lacquer and grease, the makers tell us that all you have to do is let water run on your hands and, presto! these objectionable materials will wash off and leave "a skin you love to touch." A free sample of this new hand-cream is yours for the asking. Just fill in the coupon below with No. 87.

•

88. Battery Engineering Service. Literature that describes a new service which, as its object, helps fleet operators to keep their maintenance costs as low as possible. It is conducted, we are told, by carefully trained and experienced battery engineers and is made available without charge. That's about all we know about it so far, but we shall be glad to have the details sent without obligation. Number 88, please.

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89. A High Score Without Scoring. The high score referred to is one of 80,000 miles, average, per set of brake blocks, without scoring a brake drum. At least, that's what we are told leading bus and truck operators are getting with this particular make of lining. If the "proof of the pudding is in the eating" why not accept catalog sheets, prices and details of their free test offer? Number 89 makes it easy for you to get this information without cost.

•

90. Tough-Film for Tough Work. What savings are other operators making by using good lubricating oil? What operators are in my line of business? What is the meaning of tough-film? These, and other questions will be answered, accompanied by definite proof, if you include No. 90 in your list. At any rate, it is believed that experience is the best teacher and the oil experience of other operators in your line of business should prove of more than passing interest.

WHAT DO YOU READ?

HERE'S a hand-picked assortment of literature that is offered to you entirely without obligation.

We've even made it easy for you to get it. Fill in the coupon below, mail to the Editor, and let us do the work. We'll ask them to send it at once and not to bother you with salesmen, either.

91. More Jack with Good Jacks. For doing all kinds of lifting, up and down, also for engine installation, frame straightening, and all kinds of light press work, you will find hydraulic jacks "right down your alley." And don't tell us that you have no hydraulic jacks in your equipment; most everyone has them. We believe it will pay you to read over this literature on hand, floor and garage jacks that make light work of heavy loads. Ask for No. 91 and remember, there's no obligation.

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92. Hard Steering Made Easy. If your drivers are suffering from "Driver's Back" maybe some of this is caused by difficulty in steering heavy vehicles. Here's a manufacturer offering replacement steering gears at moderate cost, that are claimed to give easier steering, longer wear and quicker adjustment. And they're preferred by 206 engineering staffs—the big boys in the car, truck and bus factories. An interesting list of cars, buses and trucks that these gears will fit is free for the asking. Just mention No. 92.

•

93. Lights That Don't Fail. A new line of lamp bulbs for truck and bus fleets that are said to stand up under repeated road shocks and constant vibration. Their balanced focuses (or should we say foci?) light the road ahead with correct illumination. Number 93 brings, free, a specification chart and price schedule.

•

94. So Long, Baldy! Bald-headed tires are a menace to safe driving. This has been proven by real authorities in the field. They also keep maintenance costs high, due to skids, blowouts, collisions and wrecks. Here's a man with a simple, inexpensive, hand-operated tool that regrooves pneumatic tires without removing them from the vehicle. The details and price? Number 94, please.

•

95. Reboring Made Easy. Many operators are interested in better methods of cylinder reconditioning. Here's a manufacturer who claims that his heavy-duty boring bar will permit closer fits, make motors run cooler, use less oil and show better operating results. It's not necessary to remove the block from the chassis, of course, which is a big saving in itself. Let this literature give you the further details, prices, etc., without obligation of course, by including No. 95 on the coupon below.

•

96. Grease Fitting Sample Free. A new line of grease fittings at "depression" prices, according to the maker. These are made in all standard types and have new, patented, construction features. No pins to fall out, lower prices and bigger discounts are but a few of the inducements, it is pointed out. Number 96 brings a free sample.

•

97. "How-to Do-It" Booklets. Yes sir! Four of them are hot off the press. They are: How to Grind Valves; How to Service Armatures; How to Finish Pistons; How to Make Bushings. The methods are recommended by car manufacturers, it is claimed. Number 97 brings all four booklets, free, of course.

•

98. Listening to the Radio? If you have been lately, you no doubt have heard the splendid "Sealed Power" presentation. The Sealed Power advantages are offered to fleet owners as well as car owners. Among the literature offerred is an interesting "Shop Chart" showing correct piston clearances, ring data, bearing tolerances, etc. How to install cylinder sleeves is another feature. No. 98 brings all the Sealed Power information without obligation.

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99. Solves Your Brake Problems. Here, for your use, is a 124-page manual containing what is said to be the most helpful information ever put between the covers of a book. It contains illustrated instructions covering every type of brake made, including vacuum and air brakes. Also facts on relining, adjusting, trouble-shooting. And it's absolutely free. Simply mention No. 99 on your coupon at the left.

The Editor, ...1932
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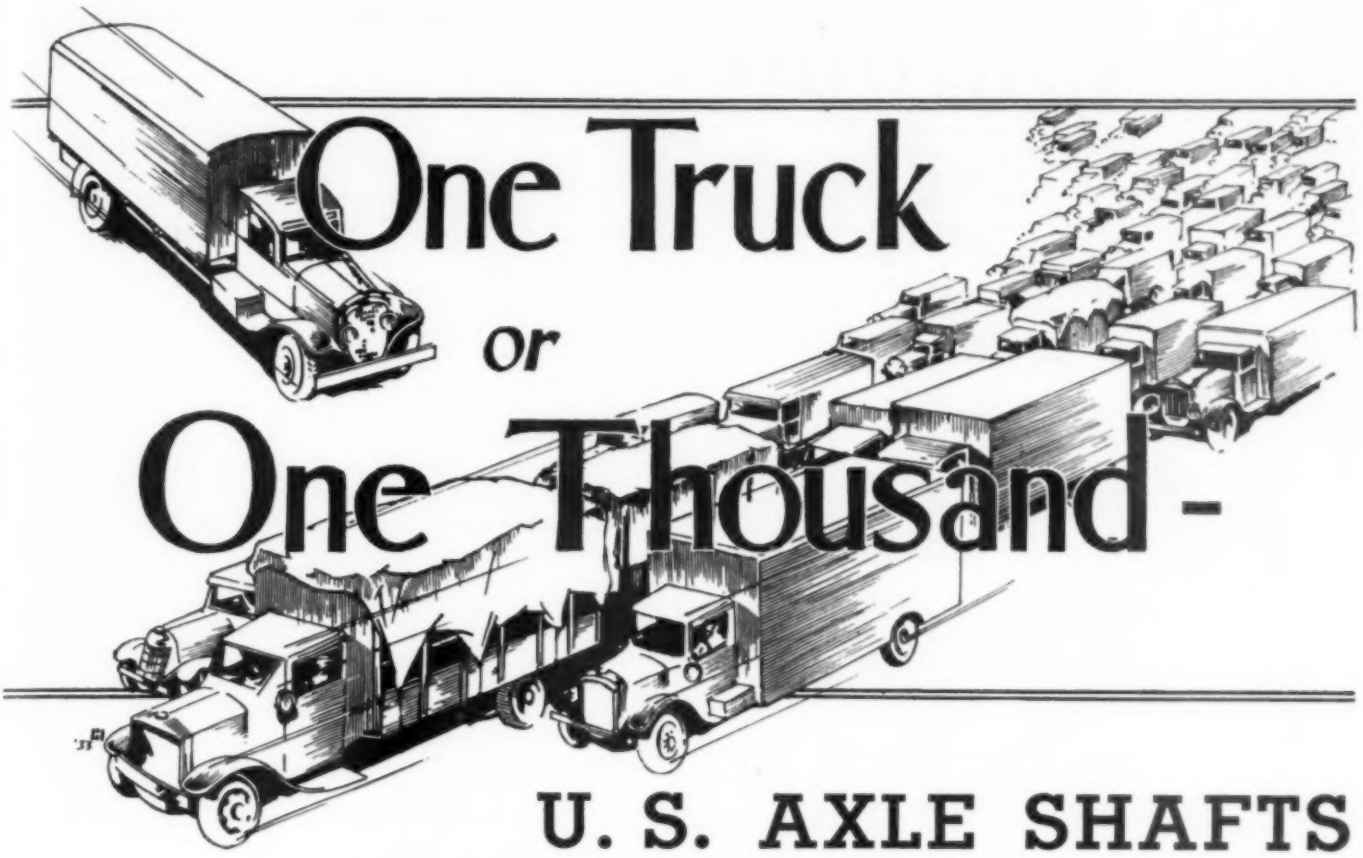

One Truck or One Thousand -

U. S. AXLE SHAFTS Will Help You Save Money

Big fleets or little fleets—they all have axle shaft troubles. The percentage of savings made possible by U. S. Shafts is just as great for the owner of a single truck as for the operator of the largest fleet. Whether you operate one truck or a thousand it will pay you in terms of reduced axle failure to use U. S. Heavy Duty Shafts.

For years this company has specialized in overcoming the axle problems of bus and truck operators. We have studied the conditions under which these vehicles must operate and have developed a line of heavy duty shafts that meet the most gruelling conditions.

If you have unusual problems that demand a special solution, our engineering service is available. Through this service we will determine the causes of excessive failure and if it is humanly possible will recommend a way to solve the trouble, even if it means the development of a special shaft to do it.

This company has helped many operators of commercial fleets—both large and small—to reduce their axle maintenance costs. No matter how many or how few vehicles you operate it will pay you to put your problems up to us. Get more complete information by mailing the convenient coupon below.

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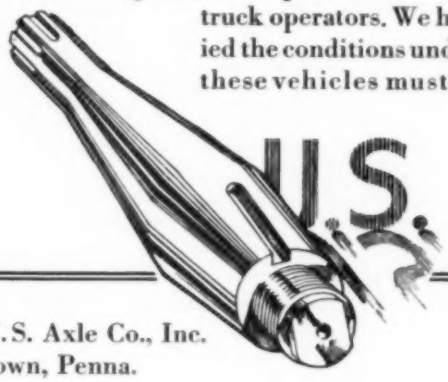

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Pottstown, Penna.

I am interested in reducing costs. Please send me more complete information about your line of axle shafts and how they will help me to reduce axle shaft failure.

Name of Company.....

Name of Individual.....

Address.....

City..... *State*.....

Say "I saw it in FLEET OWNER"—It Helps!

Indisputable EVIDENCE

Proof "beyond question of doubt", acceptable in court

with lock sealed and governor sealed to manifold

TAMPER-PROOF *in fact*

$13.50

Write for discounts

CHICAGO Locksit GOVERNORS

When you invest in governors, you are paying for protection, protection against criminal liability in case of accident, protection against unnecessary waste. To assure this protection for yourself and your property, it is essential that your governors be tamper-proof IN FACT—tamper-proof "beyond question of doubt."

No other governor affords the absolute protection of the CHICAGO LOCKSIT GOVERNOR which (1st) Adjusts with a key—is key controlled; (2nd) is made proof against alteration by a seal wire which passes through the lock *making the use of duplicate keys or lock-picking instruments impossible;* (3rd) is sealed to the manifold, with the same seal, to prevent the removal or blocking of valve.

Only this 3-point protection is "proof beyond question of doubt" . . . . Only CHICAGO GOVERNORS afford this 3-point protection.

CHICAGO GOVERNORS SAVE

20% Gasoline
40% Oil
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45% Tires
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eliminate 65% of accidents

CHICAGO GUARANTEE

CHICAGO GOVERNORS fit 93% (3,269 makes and models) without extra flanges or fittings. CHICAGO GOVERNORS are guaranteed to accurately control both engine and travelling speed under all loads, for the life of the motor.

30-DAY FREE TRIAL

Test a CHICAGO Governor for 30-days free. Just pin the coupon to your letterhead.

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505 South Laflin St. CHICAGO, U.S.A.

We will test out one of your governors. Send it on "memo bill" with the understanding that if we do not want it after 30-day trial we can send it back for full credit.

For a (make and model).....

Signed .....

One Man Services a 51-Vehicle Fleet

(Continued from page 18)

ber Two and shoots that can down the line to Car Number Eight.

By constant practice he has learned to shoot the cans almost to position. The man six cars ahead of him moves down the line, placing cans and opening draincocks. The fifty-one oil changes are thus accomplished in less than an hour.

As these vehicles, practically all house-to-house peddler cars, do not begin to arrive at the garage until after ten o'clock at night, and as they continue arriving until midnight, the mechanic does not arrive on the scene until midnight.

As the cars come in, they park diagonally headed toward the wall. The driver places his trouble card in a box near the door. Batteries are checked each night, the oil is checked twice weekly and changed monthly. As these cars carry ice cream they have to be washed and iced each night. When all these operations are done the car is headed the other way to indicate that the operations have been completed and to make it easy for the driver to drive out the next morning.

The management feels certain that this is one of the largest fleets of trucks in Los Angeles where one man does most of the mechanical repair work, and that this experience story will undoubtedly interest many other fleet operators.

●

Selecting the Refrigerated Truck

(Continued from page 24)

odifluoromethane. The secondary refrigerant is used to refrigerate the body and contents, its rate of cooling being controlled by suitable valves. Present prices of solid carbon dioxide render its use rather expensive.

Some manufacturers who have large refrigerating plants use pre-cooling systems. Brine or refrigerant is circulated through the coils in the body during the time the truck is parked in the garage. The evaporator may be either exposed inside the body or imbedded in a brine tank or eutectic solution. If it is inconvenient to connect to the factory refrigerating system a small compressor can be used. There is no attempt to control the temperature. These methods depend on a well constructed body and are good for short hauls.

Many mechanical methods of refrigeration have been used. They may be classified according to the method used to drive the compressor, as follows: (a) Electric, (b) Power "Take-off", (c) Separate Gasoline Engine.

(a). ELECTRIC—The simplest form of electric drive consists of connecting the compressor through a motor to the storage battery of an electric truck. Gasoline driven trucks have been equipped with storage batteries to drive the compressor. Batteries however are heavy, expensive, require continued service and attention and cause difficulty from voltage variations.

The truck engine has been used to directly drive an electric generator to supply energy for a motor to drive the compressor. The power take-off has also been used to drive the generator. Speed variation seriously affects the generator voltage and elaborate controls are necessary to overcome this difficulty. Automatic voltage regulators are usually complicated and require expert service.

(b). POWER TAKE-OFF. The power take-off method is utilized to drive this compressor direct either through belts or gears. This method does not permit control of the compressor speed which in turn varies the capacity of the compressor. It is not possible to

control the amount of refrigeration when such a variable is present.

A hydraulic device is now under development which will deliver a constant speed regardless of the driving speed. Such a device if reasonably free from service should afford a satisfactory compressor drive from the power take-off.

Another somewhat allied scheme consists of the use of a hydraulic unit. This system provides a variable stroke pump delivering a constant volume of oil to a fluid motor which drives the compressor. This system offers possibilities, but so far has been found too expensive and not practical.

(c). SEPARATE GASOLINE ENGINE. The unit gasoline engine drive incorporates a simple air-cooled or water-cooled gasoline engine for motive power. The engine may be belted or directly coupled to the compressor, making a compact refrigeration unit, which is independent of any other part of the truck. One, two, and four-cylinder four-cycle engines are being used. Most of these engines use magneto ignition and hand or electric starters. Although the units are heavy they are inexpensive, the cost of operation is low, and service is readily available.

Regardless of the simplicity of the engine and compressor, there are problems to be solved in the combination. Vibration causes trouble and development work is necessary to determine a suitable type of mounting. The drive is still subject to investigation, as the power characteristics of the engine and compressor are unlike those encountered with other types of service. Close cooperation between body builders, engine and compressor manufacturers will be needed for a satisfactory solution.

Many mechanical units may be equipped with an auxiliary motor so that the compressor may be operated from a power circuit during standover periods. This motor is not essential on gasoline drives where an exhaust system is available or where the exhaust gases are not objectionable.

Automatic controls are used on many units, although the simpler type, incorporating the low temperature cut-out seems to be most successful. The full automatic unit has been tried again and again with repeated failure due to the delicate devices and lack of understanding on the part of the user.

The refrigerating unit has been located in many positions on the truck. It has been placed on the top, the front, the rear, along the sides, underneath, and across the body either in the front or rear. Wherever it is placed the compartment must be large enough so that the unit is accessible. With the unit located across the body, a free circulation of air is possible. Large volumes of air are required, as for instance, when using a 1½ h.p. air-cooled compressor for low temperature work approximately 15,000 cu. ft. of air per minute are necessary to dissipate the condenser heat in addition to that required to cool the engine.

Evaporators of the dry expansion type are generally used. However, flooded evaporators properly located in the body are giving satisfactory service. If the evaporator is large it should be installed when the body is being built or a false opening provided for its installation at a later date. One large section is more desirable than several small sections which may otherwise be required. Evaporators should be made of sturdy materials which will resist corrosion. The evaporator must be protected by suitable baffles which will permit the free circulation of air. Refrigeration cannot be effective unless air circulation is permitted. This point is often forgotten when

(Please turn to page 44)

Trucks that "LEAK TIME"

Those New Taxes and License Fees Mean EVERY TRUCK MUST COUNT

Motor trucks always were expensive to operate. But *now* these trucks have an added expense; new and heavier taxes, and license fees that run up as high as $400.00 per truck! Where will it end?

Well, there is one thing you can do for yourself—and get quick results. You can make every truck count! How?

Prevent Wasteful Time "Leaks"

Put on *Servis Recorders* and get a complete record on a chart, in fact, a picture of just what each truck did—busy time and idle time—for the past 24 hours.

See the *Servis Recorder* chart shown below. Those wide heavy marks show just when your truck was working. In between are blank spaces that show when your truck was standing still—and how long.

This chart shows up all the delays. Here's a stop of 2 hours!

These Delays STARE Out at You

Delays, *avoidable delays*, are costly—from $3 to $5 an hour. When you can actually *see* these delays, you can stop them—easily. How? The coupon brings you the full story. Act today; that's none too soon. Over 80,000 trucks are now *Servis Recorder* equipped.

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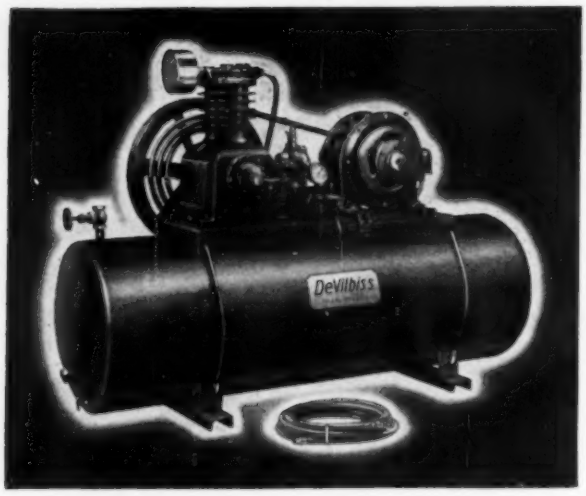
AIR COMPRESSORS, SPRAY FINISHING AND OTHER AIR-USING EQUIPMENT



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Before you buy any air-using or air-handling equipment, air compressors or hose, see the wide DeVilbiss Line for fleet service garages. At your nearest DeVilbiss distributor. Or write for catalog.

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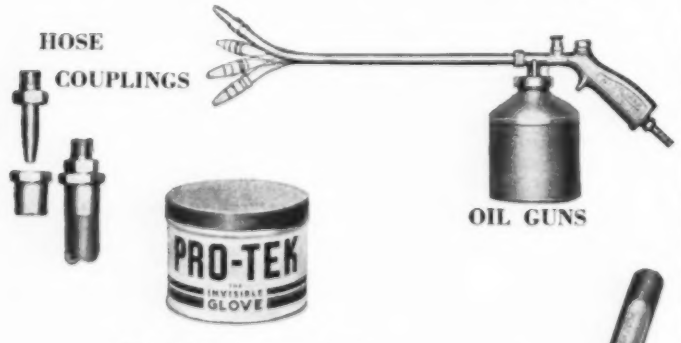


PRO-TEK protects the skin against gasoline, battery acid, fumes. Paint, lacquer, oil, grease and dirt wash off with running water. Send for free sample.

DeVilbiss

Truck Accomplishments in 1932

(*Continued from page 20*)

highway officials are as follows: length of single vehicle —35 feet; length of combination of vehicles—45 feet; width—8 feet; height—12 feet 6 inches. Tractor and semi-trailer units are classified as single vehicles in determining vehicle lengths.

A tendency toward manufacture of smaller equipment is indicated in the production figures which show an increase in the percentage of smaller equipment since 1927.

Shippers still have control of truck transportation. About 85.5 per cent of all trucks are owned by shippers. Contract "for hire" operators own 8.7 per cent and the remaining 5.5 per cent are owned by common carriers. Of this latter class 1.5 per cent are interstate operators.

Ten of the leading owners of truck fleets in the country are:

Company	*Vehicles*
American Tel. & Tel. Co.	15,500
Standard Oil Co. of N. J.	12,000
Borden Company	10,000
Railway Express Agency	9,247
Standard Oil Co., Indiana	7,465
Nat'l Dairy Products Co.	6,000
Mid-West Utilities Co.	3,881
Continental Baking Co.	3,500
Standard Brands, Inc.	3,275
Standard Oil Co., Calif.	2,677

American railroads show an increase in trucks used. Aside from those operated by Railway Express Agency, 100 railroads operated 12,000 trucks in 1932. This represents an increase of 2,000 over 1931 which is explained by the fact that where there were 85 railroads operating trucks in 1931, there were about 100 operating them last year. A decline of approximately 200 railroad buses was noted for last year. About 4,800 buses were operated by the carriers.

Current studies have developed many facts relative to truck taxation which have not been generally recognized.

In most states, owners of trucks are required to pay a great many special imposts or taxes. Not infrequently the truck owner must pay state and local governments levies based upon the gross weight, capacity, gross receipts, mileage, ton-mileage, horsepower, and/or length of his vehicles, as well as upon the fuel they consume. With federal, state and local gasoline taxes amounting to as much as twelve cents per gallon as they do in one Alabama community, and with the average gas tax rate for the country now above five cents per gallon, such levies are becoming major items in vehicle operating expenses.

In addition to the above levies, commercial vehicle owners pay income, business and property taxes just as do other types of businesses and also pay the discriminatory excise levies on motor vehicles, parts, tires and fuel which were imposed last June.

Motor trucks are among the highest taxed facilities in operation. The approximately 3,231,000 motor trucks registered contributed about $290,000,000 in all kinds of taxes during 1932. While there is no basis for an equitable comparison of motor truck taxes with those of railroads, it is interesting to note that special highway taxes paid by motor truck owners exceed those paid by railroads in all kinds of taxes during the past year. Truck taxes are about 27 per cent of the total motor vehicle tax payment, though motor trucks represent but 13 per cent of all the vehicles on the highways.

Charts of the National Safety Council indicate a steady drop over the past five years in the number of

fatal accidents in which trucks and buses are involved. This can be attributed to improvement both in vehicle equipment and in highways, as well as to the driver educational work which is being sponsored by many national, state and local industrial and civic organizations.

Bus operation in 1932 was approximately the same as in 1931 with a total of 99,000 of these vehicles in operation—52,000 of them being used for transporting children to and from rural consolidated schools. Of the remainder, 45,000 were revenue carrier buses and 2,000 used in special services. About 12,000 of the revenue buses were operated by street railways.

●

Drastic Truck Law Suggested as "Model"

INDICATIVE of the type of motor legislation which will be sought at the state legislatures this winter is a "model" law which has been widely distributed and which has the formal approval of the National Association of Railroad and Utilities Commissioners. Thirty-nine legislatures are now in session. This measure is meeting the opposition of motor vehicle owners in most states, although already it is apparent that powerful influences will be exerted to bring about its adoption.

The suggested law defines the various types of motor carriers and subjects all kinds, including private carriers, to regulation. In addition, it suggests a mileage tax graduated according to weight in the case of trucks and on a passenger capacity basis in the case of buses. It makes it mandatory upon the commissions to fix the rates of the contract carriers at not less than the railroad or other common carriers' charge for substantially the same service.

This provision in its mandatory character goes farther than the much discussed Texas law, which gave the commission discretionary power similarly to fix rates. If one hauls for more than one shipper under a contract, he is presumptively made a common carrier. Also, if he hauls for only one shipper but makes deliveries to more than three consignees, he is a common carrier.

The act grants broad powers and tremendous authority to the commission—it having power in all matters, whether specifically mentioned or not, to regulate motor transportation.

The principal features in the proposed law follow:

1. The commission shall prescribe minimum rates, fares and charges for contract carriers, which shall not be less than common carriers (including rail) for substantially the same service.

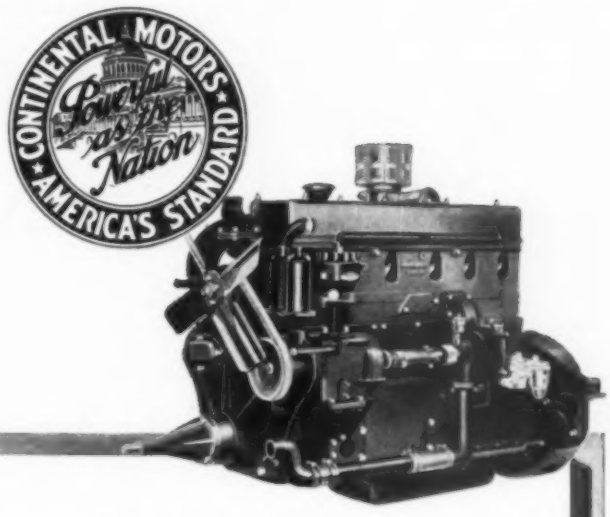
2. Transportation for more than one consignor; or to more than three consignees shall be prima facie evidence of operation as a common carrier.

3. An advance deposit shall be made by all common and contract passenger or property carriers; and also private property carriers to be credited against the tax required. When this sum is exhausted, monthly payments must be made.

4. In addition to license and other taxes there shall be assessed a mileage tax, the amount to be charged to be determined in each state upon a graduated weight basis. To arrive at the weight: there shall be added 200% of the manufacturer's rated capacity to the weight of the vehicle itself; or in the case of passenger-carrying vehicles, the passenger capacity shall be multiplied by 150 pounds which shall be added to weight of the vehicle itself.

5. Time schedules of common carriers are subject to coordination with other rail and motor common carriers by the commission so as to prevent unnecessary duplication.

(*Please turn to page* 44)



Because Continental engines deliver the efficient, economical performance demanded by fleet owners, 53% of all truck manufacturers now use them. There can be no better evidence of satisfactory operation.

●

Continental's laboratory engineering facilities and data are at your disposal. We invite you to write.

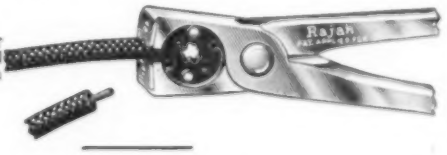
Continental Engines

Continental Motors Corporation, Detroit • Muskegon

You Save Money

on rewiring jobs by using the new **Rajah** Hand Crimping **Tool**

This new tool crimps Rajah Terminals to ignition cable without the use of solder or any other tool. Note the simplicity of using it.



(Right) The cutter on end of Tool will remove just enough insulation.

(Left) Bend the exposed wire strands over end of Cable, then insert into ferrule of Terminal.

(Right) Now crimp Terminal to Cable by using the Hand Tool—The Terminal is inserted in the Tool with the ferrule flush with the crimping jaws—Compress tightly and you have a positive and **permanent** connection.

Tool with neat metal box containing 250 distributor terminals and 253 assorted spark plug terminals, $11.20. Tool alone $4.00.

THE RAJAH COMPANY, Bloomfield, N. J.

Send this coupon with your letterhead or business card for our special offer. You are sure to receive an unusual present. No obligation.

Name .....

Address .....

☐ Proprietor ☐ Service Manager ☐ Shop Foreman ☐ Mechanic

QUESTION *of the* MONTH

"By far, one of the most valuable departments to be found in any automotive publication. Every fleet man should be delighted to cooperate."—A Reader

Here are Some of the Most Interesting Replies to Question No. 27:

"Always Looking for Something Better"

"THE life of spark plug wiring in our fleet is from 15,000 to 30,000 miles, or 12 to 18 months. We do not adhere to the 10,000-mile plan of replacing ignition cable. When it shows signs of deterioration, it is replaced. Our ignition cable cost is very low, in relation to our total maintenance figures.

"High tension wiring is purchased in spools, as this method is more economical. We prefer Packard and Sterling cable, and we buy it through jobbers. This material is selected on a basis of past performance and by the service we get in time and miles.

"In attaching terminals to cable, we use both solder and solderless terminals and have had no difficulty in keeping them attached. We are always looking for something better and find good cables necessary. If our mileage may seem high, it is because we keep motors and cables free from grease and oil. Extreme heat and grease are the reasons for shortened cable life, we find."—*T. Bowers, Garage Foreman, The Wm. Schluderberg-T. J. Kurdle Co., Baltimore, Md., operating a fleet of 43 trucks and 37 passenger cars.*

●

A Tough Job for Ignition Cable

"WE determine the relative merits of ignition cable and make our selection of a basis of performance, particularly with reference to the way cable will stand up in the Buick motors in our Yellow Cabs. In a good grade of cable, the insulation will stand up in these motors, which are hard on cable, due to the location of the wires and the heat.

"We get about 30,000 to 40,000 miles per set of wiring; or 1½ to 2 years. We do not adhere to the 10,000-mile plan of changing cable, but we change it when it shows the least signs of being brittle, and breaks easily.

"In regard to cost, ignition cable amounts to about 1 per cent of our total maintenance cost. We purchase it in spools, as this method has been found more economical than in sets and we use about 18 feet per month. This cable is purchased from a local jobber.

"Terminals are attached by solder and we have had no difficulty in keeping them attached."—*H. C. Lariner, Gen. Mgr., Yellow Cab & Baggage Co., Topeka, Kans., operating a fleet of 17 trucks, 19 taxicabs and 1 passenger car.*

●

Six of One; Half-Dozen of the Other

"WE prefer ignition cable as to make on more or less of a fifty-fifty basis, our choice being Packard and Belden. We get about 1 year's service out of cable, but we do not adhere to the 10,000-mile plan of changing.

"The cost of ignition cable in relation to our total maintenance costs is practically negative. We purchase it from a jobber, in spools, as this method has been found more economical than in sets. About 50 feet per month are used by us. Terminals are attached by soldering.

"The relative merits of cable are determined by actual test in our equipment, and the cable is selected on a basis of prformance only."—*G. M. Elberson, Asst. Mgr., Bradley Truck Co., Santa Maria, Calif., operating a fleet of 14 trucks, 6 trailers, 2 passenger cars and 1 service car.*

●

Testing Tells Everything

"IGNITION cable is replaced at intervals of 12 to 18 months or at a mileage interval of from 15,000 to 20,000 miles. We do not adhere to the 10,000-mile plan of changing cable, but test it to determine its condition.

"We prefer Belden cable and purchase it from a local jobber in spools; also in sets. However, the spool method seems to be more economical. This material is selected on a basis of actual test in service; that is how we determine the relative merits of different brands."—*C. T. Whipple, Garage Foreman, Mid-Continent Petroleum Corp., Tulsa, Okla., operating a fleet of 87 trucks, 2 trailers, 154 passenger cars and 24 tractors.*

(Please turn to following page)

It Once Killed *a* Cat—*but*

—it's not our Curiosity that's back of this Question-of-the-Month Department. It really is yours. Each month a tabulated report covering the replies received is mailed to those fleet men participating in the survey.

This method by which operators are able to interchange actual maintenance practices is without a doubt one of the most mutually valuable services that can be rendered without cost.

However, it is only fair and just that distribution of these tabulated reports be restricted to those that assist in their compilation. We have made it as easy as it is physically possible for you to participate. Just fill in the blank appearing on the page opposite and mail it in to me. Rest assured that it will be kept in strict confidence and only the tabulation, without name and address will be circulated.

Of course you will want to see what other operators are doing along different lines each month. The tabulated report will tell you. But as the esteemed Chinaman would say: "No blank-ee, no report-ee." Your cooperation will be of great help.

H. Clay Fischer, Editor

A FEW *of the* REPLACEMENT REPORTS *(Continued)*

Life Varies With Type of Vehicle

"LIFE of ignition cable in our fleet varies with the type of vehicle. We do not stick to the 10,000-mile plan of replacing cable; this procedure depends rather on the actual condition of the cable itself.

"We use Packard, Belden and T-N cable, which is purchased from our jobber, in spools; this method is more economical than sets, we believe, and we use about 300 feet of cable per month.

"This material is selected on a test basis; different brands are tested on the same vehicle. Terminals are attached by the Eisemann method and we have had no trouble with their coming off. We could use more information on a handy terminal-attaching tool."—*W. A. Taussig, General Supt., Southwestern Trans. Co., Texarkana, Texas., operating a fleet of 67 trucks, 59 buses, 32 trailers and 11 passenger cars.*

●

Time, Mileage Basis Found Impractical

"IT has been found impractical in our fleet, to change ignition wiring on the basis of a certain mileage or time period, as the age of the engine, its care and the conditions under which it operates are, to our mind, the determining factor. We do not, of course, adhere to the 10,000-mile plan of changing.

"Time to change cable is determined by regular inspection, using a motoscope. We have no accurate record of ignition cable costs in relation to total maintenance costs.

"Packard cable is preferred and for our purposes the set method of purchasing has been found more economical; these are obtained from a local jobber. Terminals are attached by crimping and we have had no difficulty in keeping them tight.

"Ignition cable is selected on a basis of performance and is chosen because of its performance—actual use in the field. Cable on a motor which is kept clean will last much longer than one that is covered with oil and dirt."—*E. H. Danner, Asst. Plant Mgr., Illinois Telephone Co., Jacksonville, Ill., operating a fleet of 7 trucks, 5 trailers and 12 passenger cars.*

●

Keep Mileage Records; Then Test Cable

"PLUG wiring in our fleet lasts about from 12,000 to 20,000 miles. We do not change at 10,000-mile intervals, but keep records of the mileage when the new cable was put on and after some length of time go over it to look for cracks, leaks, etc.

"Percentage of maintenance costs chargeable to ignition cable is very little. We prefer Belden cable, purchased from a jobber in spools. We have selected this cable on a basis of performance and test, having used different brands, and we think that what we have is the best found yet.

"Terminals are attached by soldering and they generally stay put. We could use information on a handy terminal-attaching tool."—*Schreeck's Ice & C. S. Company, C. F. Biggs, Engineer, Baker, Ore., operating a fleet of 7 trucks and 7 miscellaneous vehicles.*

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 29—Wash and Polish

How often are your vehicles washed? .....
Is this done in your own shop? ..... Done outside? .....
What method is used? (Washing machine, overhead sprinkler, regular water pressure, compressed air, etc?) ..
.....
.....
Do you use soap? ..... If so, what particular kind? .....
How often are your vehicles polished? .....
Is this done in your own shop? ..... Done outside? .....
What method is used? (Hand or electric polishing?) .....
What type of polish is most satisfactory? (Cream, liquid, etc?) .....
How is polish purchased? (In bottles, cans or bulk?) .....
About how much polish is used in your shop per month? .....
Please state your preference as to make of polish, if permissible .....
What is your source of supply? ☐Manufacturer; ☐Jobber; ☐Dealer.
Do you apply protective polish (such as Simoniz) to new vehicles when placed in service for the first time? ....
..... At succeeding intervals? .....
How often is this "special" polishing done? .....
If so, what material is best for this purpose? .....
Any other remarks that you think fleet operators would find of interest? .....
.....
.....
.....
How many vehicles in your fleet?
..... Trucks; ..... Busses; ..... Trailers; ..... Pass. Cars; ..... Others.

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....
Address .....
City and State .....
Your name ..... *Position* .....

This Operator Stopped Coil Cushion Repair!

He operates 68 trucks. Keeps a close check on all maintenance items. Repairs his truck cushions twice a year. Checked his records back three years and found he was spending *$12.00 per year per truck for cushion repair!*

Now he uses Sponge-Aire cushions because they *never need repair—yet cost no more than coil cushions.*

Write for more particulars today.

SPONGE-AIRE
SEAT COMPANY, INC.
1433 MAIN ST. BUFFALO, N.Y.

HOW TO BUY A TRUCK

● Reo's "Ability Rating" System takes the mystery out of truck selling—replaces claims with actual performance facts. Free booklet describes this revolutionary plan in detail.

WRITE OR CALL FOR YOUR COPY

Reo Speed Wagons range from 1½ to 4 tons, $625-$2995. 32 wheelbases—4's—6's—8's. Tractor-Trailer units from 16,000 to 32,000 lbs. as low as $1575 for complete unit. All prices chassis f. o. b. Lansing plus tax.

REO MOTOR CAR COMPANY
LANSING — TORONTO

Selecting the Refrigerated Truck

(*Continued from page 39*)

transporting products in boxes that can be packed close together. Proper drain pans should be installed under the evaporators so that drippage will not damage the products. Regular defrosting of the evaporators increases their efficiency. Ice cream bodies are rarely defrosted, but the snow formation should be removed by frequent scraping.

Control of the refrigerant is of utmost importance. The liquid must be retained in its proper place in the system by suitable location of the expansion valve and its control. Spillage of liquid from the evaporator into the crankcase must be avoided.

In this article we have tried to establish a few guide posts that may be kept in mind and be given consideration by truck and body builders, engine and refrigeration manufacturers and users, so that more rapid development of successful equipment may be possible for the refrigerated truck industry.

Editor's Note: The foregoing treatise on Refrigerated Trucks was presented as a "Paper" before the recent Transportation Meeting of the Society of Automotive Engineers at Toronto, Canada, and is published by kind permission of the Society.

●

Drastic Truck "Model" Law Proposed

(*Continued from page 41*)

6, Common carriers' rates shall not be unlawfully preferential, discriminatory, prejudicial or unjust or unreasonable.

Contract carriers are required to secure a permit, conditioned on: Applicant satisfying the commission that the privilege sought will not endanger the safety of the public;—or interfere with the public use of the highways;—or impair highway condition or maintenance directly;—or indirectly impair service of common carriers adequately serving the territory.

Contract carriers are forbidden to give or cause any undue or unreasonable advantage or preference to those they serve as compared with patrons of other motor or rail common carriers; or to subject them to any undue or unreasonable discrimination or disadvantage; or by unfair competition to destroy or impair service of business of any common carrier, or the integrity of the state's regulation.

Certificates of convenience and necessity are required of common carriers upon the usual conditions; if existing transportation facilities are reasonably adequate, a certificate will be denied.

The proposed regulations extend to the private motor carriers, who are defined as persons engaged in motor vehicle transportation of property sold or to be sold in furtherance of any commercial enterprise;—or property transported by the owner, lessee or bailee for the purpose of lease, rent or bailment.

Exemptions suggested are:

1. Common motor carriers operating wholly within city or village.

2. Contract motor carriers operating wholly within city or village;—or those exclusively engaged in transportation of school children.

3. Private motor carriers operating wholly within city or village, or within radius of (blank) miles; or to producer transporting livestock, farm products in own vehicle, or supplies for own use.

Motor vehicle interstate transportation is affected only to the extent permitted by the United States Constitution.

The state commission it is proposed shall have power in all matters whether specifically mentioned or not.

TOLEDO

WATER PUMP PARTS

insure a tight, efficient cooling system on every truck or bus in your fleet. You can depend upon them to fit accurately and you can get quick service from your Toledo jobber

THE TOLEDO STEEL PRODUCTS CO., TOLEDO, OHIO

KRAMER Certified Cooling RADIATORS

for TRUCKS BUSSES and TRACTORS

OVALTUBE TUBULAR and TURBO CELLULAR CORES

Complete Radiators

TRENTON AUTO RADIATOR WORKS

Trenton, New Jersey

NEW LIGHT

You *will surely want a copy of*

"ELECTRICAL TROUBLE SHOOTING"

(on the Motor Car and Airplane)

By A. H. PACKER

A new edition is just off the press. It covers everything from wiring to armature rewinding. Takes up generators, starters, cutouts and regulators on all cars, trucks, busses and airplanes. Contains scores of test kinks that will be found handy in the shop. Explains test bench construction; takes up flat rates; in fact anything electrical in the automotive game.

Earns its cost on first job's profits. Has 47 chapters, 530 pages, 353 illustrations, over 600 questions and answers, four trouble shooting charts and a thorough index. Size 5½ x 8 inches. Flexible binding. Price $4.00. Sold on five-day trial. Money back if not satisfied.

Book Department

The FERGUSON PUBLISHING CO.,
90 West Street New York City

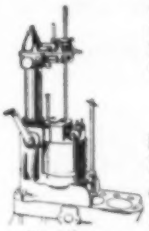
Use '32 records *and figure these* SAVINGS

IF you're serious about cutting costs and saving money, don't overlook these facts:

A Van Norman Piston Grinder eliminates the necessity of carrying a large stock of standard and oversize pistons, releases money tied up in inventory and makes it possible to get immediate service day or night. *That's worth something.*

Oversize pistons pulled out of blocks brought in to be rebored, can be ground down and used in the blocks of smaller motors. *That's money saved.*

Remember, when considering cylinder reconditioning, that the Van Norman Per-fect-o Boring Bar is a companion tool to the piston grinder and a *money-saver*. Pistons, rings and pins can be fitted immediately after boring, no honing is necessary. 4 non-revolving, expansible, patented supports follow the fly cutter down the cylinder, insuring absolute accuracy under all conditions.



Per-fect-o Boring Bar

Van Norman Piston Grinders (with cam grinding unit if you want it) and Per-fect-o Boring Bars are recognized as standard equipment wherever heavy duty work is found. Write for complete data on this and other shop equipment,—no obligation.

VAN NORMAN

MACHINE TOOL CO.

164 WILBRAHAM ST. *Springfield, Mass.*

A TRULY GREAT HOTEL

When you visit Detroit next time stop at Hotel Fort Shelby. You'll enjoy its thoughtful, efficient, unpretentious service . . . its savory foods and cozy, cheerful, charming rooms. ¶ Every unit in the Hotel Fort Shelby is paneled . . . servidor equipped . . . attractively appointed and popularly priced; all rooms have private bath and circulating ice water. ¶ Hotel Fort Shelby's location in the heart of Detroit's shopping, theatre, financial, insurance and wholesale districts is a happy one . . . no other large hotel in the metropolitan area is so near the principal railway terminals, airports and steamship piers. 900 rooms . . . many as low as $3.00 per day . . . suites $10.00 and upward.

Motorists are relieved of their automobiles at the door without service charge. Write for free road map, and your copy of "Aglow with Friendliness," our unique and fascinating magazine.

HOTEL Fort Shelby

"AGLOW WITH FRIENDLINESS"

E. J. BRADWELL, *Manager*

DETROIT

In the Heart of things
MEN OF MOTORS prefer THE HOTEL WOODWARD because of its ideal location "Right in the heart of automobile row"—its proximity to the amusement center—its quiet yet congenial atmosphere—and its modest tariff.
Rooms with Bath from $2.50
THOS. D. GREEN
Ownership-Management
Hotel
WOODWARD
•BROADWAY at 55th ST•
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KENT
AUTOMATIC
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Now OWNED AND OPERATED
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LEY GARAGE CORPORATION
The last word in convenience and safety for your car . . . occupies its own particular compartment . . . offers every opportunity for storage—by the hour, the day, the month; with or without service . . . Rates $1.50 monthly and upwards . . . Expert repairs on all makes of cars . . .
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GRAND CENTRAL
44 ST. near THIRD AVE.
Tel. MUrray Hill 2-0460
YOUR CAR NEVER TOUCHED BY HUMAN HANDS

Greater Mileage — Greater Safety
With This New Groover at a New Low Price

Smooth tires can be made to give many additional miles of *safe service*. This new type groover will bring you real tire economy. It is portable, efficient, accurate, fast, sturdy and easily operated. Does the job without removing tires. Many prominent fleets have reported that it pays for itself within a few days. A real money saver! Its low cost will interest you. Mail coupon today.

This Coupon will save you Money!

SAFE TOOL MFG. CO., 2-33
Bridgeport, Pa.

Send me complete information and price of the "ROLL-ABOUT GROOVER".

Name: .....

Address: .....

City: ..... *State:* .....

Cut Your Fitting Cost In Half with

WISCO GREASE FITTINGS

Made stronger, of *steel*, with double length springs and machined-in lugs instead of pins, these fittings can be safely *tightened* in place, do not shear.

All standard types. Lower list prices. Larger discounts.

Write for FREE SAMPLE

WISCO PRODUCTS COMPANY
RACINE WISCONSIN

ARMORPLY
A SUPERIOR METAL FACED PLYWOOD PANEL FOR BODY CONSTRUCTION

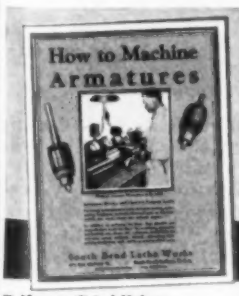
Write for samples and prices

UNITED STATES PLYWOOD CO. INC.
603 W. 36th. ST. NEW YORK CITY

White, P-A, Indiana Under One Roof

MANUFACTURING, engineering and sales departments of The Indiana Motors Corporation were moved to Cleveland from Marion, Ind., recently, according to A. G. Bean, President of The White Motor Company.

This brings to the White factory, the manufacture and assembly of three of the oldest truck companies in the industry, White, Pierce-Arrow and Indiana. The removal of the Pierce-Arrow truck lines from Buffalo, N. Y. to Cleveland is now completed and the work of transferring the Indiana lines is well under way. Studebaker trucks will continue to be built at South Bend and Rockne commercial cars at Detroit.



THE twelve page bulletin shown at left is one of ten Service Bulletins describing and illustrating the latest and most practical methods for servicing autos, trucks and buses. Shows how to do the work. Check bulletins below which interest you and mail the coupon.

Auto Service Bulletins

- ☐ How to Grind Valves
- ☐ How to Machine Armatures
- ☐ How to Service Flywheels
- ☐ How to True Brake Drums
- ☐ How to Service Differentials
- ☐ How to Bore Connecting Rods
- ☐ How to Make Bushings
- ☐ How to Service Crankshafts
- ☐ How to Finish Pistons
- ☐ How to Make Handy Shop Tools
- ☐ New Lathe Catalog No 93

SOUTH BEND LATHE WORKS
666 E. Madison St., South Bend, Ind.

Gentlemen: Please send, free postpaid, auto service bulletins marked at left.

Name.....

Address.....

City..... *State*.....

FREE TEST!

PECK VALVE INSIDES

We'll send you free of charge enough Peck Valve Insides to make a fair test. See for yourself how much longer Pecks last—hold pressure and give all around better service.

Write today for Valves!

THE PECK SPRING CO.
Plainville, Conn. U. S. A.

Name .....

Street .....

City .....

LIVE RED RUBBER *(not moulded)*

for ROAD and SHOP

"Check and Double Check"

A NEW "Dublchek" tire valve cap is announced by A. Schrader's Son, Inc., Brooklyn, N. Y.

"Dublchek" is an air-tight dust cap that is permanently attached (with pliers) to the valve stem of any tire. It provides an extra check on inflation pressure because it contains a second "valve core" within itself, and excludes dust and dirt as well.

When "Dublchek" is attached, it is not necessary to remove it and tire inflation can be done in the conventional manner.

Besides the above features, the makers point out that "Dublchek" saves time in inflating tires, as it is not necessary to remove anything. Just apply the air chuck and put in the desired amount of air. Gauging is done in the usual way.

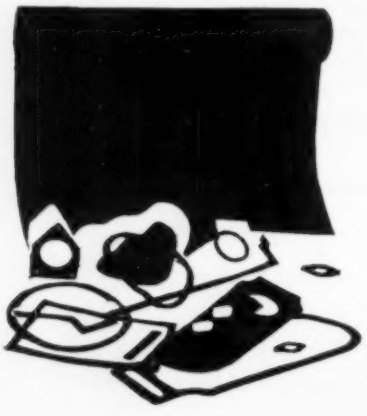
An interesting folder has been prepared that outlines, much more thoroughly than we can do it here, all the features of this new device. For free copy write to A. Schrader's Son, Inc., 470 Vanderbilt Ave., Brooklyn, N. Y.

Vellumoid Samples Offered Free

EVERY Vellumoid gasket—whether ready-cut, or cut from the sheet—is a quality product, which will stand the gaff of the hardest service, according to the manufacturers of this material.

There is nothing fragile about Vellumoid. It is made to stand rough handling, and is always ready for use. No deterioration in the stock room, and no breakage in applying—and the shellac pot can be thrown away, it is declared.

A few yards of Vellumoid, with a knife or ball-peen hammer, and you have immediately available a complete set of gaskets—not one missing, and each gasket of the highest quality. Cut or tap out gaskets as you need them. No trouble, no delay waiting for a missing gasket.



And for the cars, trucks, and busses in your fleet, the manufacturers offer Vellumoid ready-cut gaskets. Accurately sized, they do not stretch nor shrink, and are always ready for use.

The best way to know Vellumoid is to use it, and for this purpose, the manufacturers offer a generous working sample to fleet owners who write on their letterheads, either to the FLEET OWNER, or direct to The Vellumoid Company, 54 Rockdale Street, Worcester, Mass.

Mallory "Universal" Coil

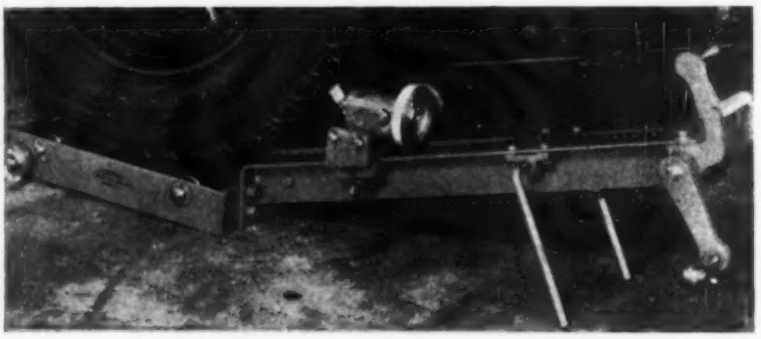
AFTER many years of experience in building ignition coils of high quality, Mallory now offers a new low-priced coil that can be used on practically any ignition system.

The new coil is known as Model 800 Mallory, and is completely sealed in a moulded bakelite case. This feature is said to prevent electrical choke and to permit the coil to completely discharge and produce full-powered sparks. The mounting bracket is constructed with a gap that is insulated to prevent electrical choking.

For complete details, low list-price and other information, address Mallory Electric Corp., Vancouver Ave. & P. M. R. R., Detroit, Mich.

"Roll-About" Tire Groover

THE "ROLL-ABOUT" Groover was designed by the Safe Tool Manufacturing Co., of Bridgeport, Penna., to meet the special needs of fleet owners.



It is a sturdy, tool, which is easy to roll or carry to the truck with smooth tires. The regrooving job can be done without removing the tire from the car. It will groove any size accurately in less than five minutes per tire, according to the makers.

Such concerns as John Wanamaker, Gimbel Brothers, Strawbridge & Clothier, Philadelphia *Public Ledger*, Philadelphia *Inquirer*, Reading Transportation and Kopper's Koke, have found the "ROLL-ABOUT" a necessary addition to their transportation equipment, not only as a saving in tire expense, but also as an accident eliminator, the manufacturers report.

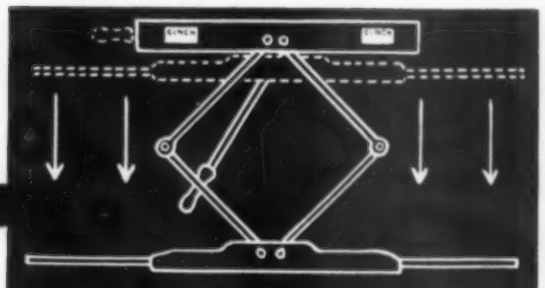
Through tests by a fleet owner, it was shown that a truck operated at thirty miles per hour and suddenly braked, had an average forward slippage of five and one-half feet and a side slippage of one and one-half feet with smooth tires. When the tires were grooved and the test repeated, the forward slippage was only one and one-half feet and there was no side slippage.

Smooth tires give drivers an alibi for accidents, and the elimination of just one accident often pays for the tool many times over. It will pay every fleet owner to acquaint himself with the merits of regrooving and the Safe Tool Co., Bridgeport, Pa., will be glad to send details on request.

ECONOMY·CONVENIENCE

TO THESE FEATURES STUTZ ADDS....

Clear Safe Vision



THE WINDSHIELD WIPER THAT CLEANS DOWNWARD QUICKLY and SURELY

THE modern new Pak-age-car, built by Stutz and constructed for economy, utility and safety, offers the Cinch Vertical Windshield Wiper as standard equipment. Stutz Engineers found assurance of *clear, full vision* in this wiper, designed to free the windshield of even the *fastest freezing sleet*. This dependable Windshield Wiper cleans thoroughly by *downward* strokes and automatically returns to top of pane where it can in no way obstruct the vision.

Follow the practical example of Stutz Manufacturers and equip with this sturdy, heavy duty, Cinch Vertical Windshield Wiper. For safety sake write today for full details.

CINCH VERTICAL WINDSHIELD WIPER

MANUFACTURING CORP., 2335 W. VAN BUREN ST.
CHICAGO

VELLUMOID GASKETS

For the Oil, Gasoline, and Water Connections

VELLUMOID Stands the Gaff

Bend it—treat it rough—you can't injure Vellumoid! It does not tear, crack, or break, either in stock or in use—and simply forget the shellac pot.

There's never a weak or broken gasket to bother with, neither is there any breakage in putting it on—every Vellumoid connection is tight—and ***stays tight.***

• •

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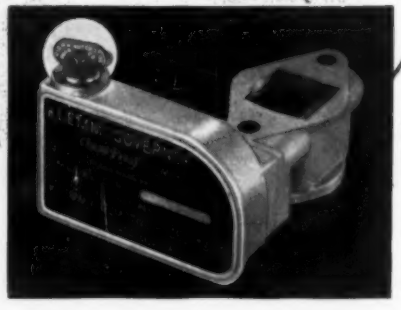

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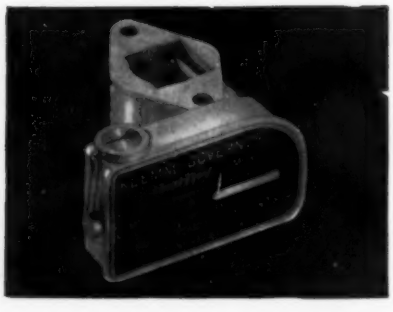

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